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ORIGINAL ARTICLES.

DIPHTHERIA—A CLINICAL STUDY.[1]

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(*Concluded from page 316.*)

TREATMENT.—The rational and successful treatment of a disease so varied in its manifestations and so various in its intensity as is diphtheria must not be entirely empirical, but must be based upon a knowledge of its pathology. The aim of treatment must be to combat those conditions or to abort those processes that result in death.

The modes of death from diphtheria may be classified with more or less exactness as follows:

A. *From systemic causes:*

1. Inanition
   - Non-assimilation
     - Inability to digest.
     - Inability to absorb.
   - Inability to partake
     - Paralysis of the muscles of deglutition.
     - Inflammation of the fauces.
     - Obstruction by membrane.
   - Neglect of feeding.
2. Septic conditions
   - High temperature. Rare.
   - Hemorrhage due to lack of vitality of capillary walls.
   - Coma.
   - Degeneration of the blood.
3. General paralysis. Very rare.

B. *From local causes:*

1. Stenosis of larynx
   - By membrane.
   - By foreign body, on account of paralysis of muscles of deglutition.
2. "Heart-failure"
   - Fatty degeneration of heart.
   - Degeneration or inflammation of cardiac ganglia.
   - Disintegration of blood.
   - Endocarditis.
   - Paralysis of heart, due to central lesions of nervous system.
3. Pneumonia
   - Ordinary.
   - Septic.
   - Membrane-extension.

The conditions here outlined are, in their various modified or aberrant manifestations, almost legion; they may exist separately or at once, and a somewhat elaborate scheme of treatment is necessary in order to combat them. No hard-and-fast line can be drawn as to medicaments or dosage, for they may need to be varied almost from hour to hour. Few diseases—indeed, I am almost prompted to say, no other disease—demands so much or so varied medication, and in no other kind of sickness have I seen medication do so much absolute and incontrovertible good.

There is, however, no *specific* medication for diphtheria. No one remedy can cure all cases or keep up an uninterupted successful record during several successive epidemics or years. Nevertheless, it can be said without fear of contradiction that the general principles of therapeutics, faithfully followed, even in desperate cases, are here, as almost nowhere else, productive of results that are gratifying to both physician and patient.

Inanition must be combated by systematic attention to the diet. Easily-digested and easily-absorbed materials are a necessity, and should be administered with regularity at short intervals. Peptonized milk is of great value; beef-juice, freshly expressed, may be given frequently in small doses; the white of an egg, well beaten, with pepsin added, is easily retained, and may be given either by mouth or by rectum; oatmeal or cracked wheat will often be very grateful to the patient, and may be given freely.

The treatment of the septic conditions must aim (1) to encourage excretion, and especially by such methods as will carry off the toxic products that have been thrown into or formed in the blood; (2) to increase the resisting power of the tissues and especially of the hematic elements; (3) to antagonize the vitality and development of microörganisms, and (4) to destroy or neutralize the chemical products of germ-life.

The remedies that have given me most satisfactory results in meeting the indications just named are calomel, tincture of iron chlorid, whiskey, and mercury bichlorid or biniodid.

The effect of calomel on the system made it years ago the one great remedy in medical practice. An unintelligent prejudice has, during the past generation, kept it from being employed frequently or efficiently; but we are again coming to appreciate the fact that "modification of the secretions and excretions" is an essential of successful medical treatment. Especially is this true of diphtheria, in the therapy of which disease calomel now holds a leading place.

Given in a dosage which seldom needs any limitation until its characteristic effect is produced, I have never seen calomel do harm. But, as the

[1] A paper read before the Denver and Arapahoe Medical Society, December 13, 1892.

dosage is for effect, it should be discontinued or decreased when that effect, as indicated by thin, green bowel-movements, has been produced. Sometimes a total of ten grains, given in doses of one grain every hour, will be sufficient to produce the result. At other times as much as 200 grains will be required.

In answering the question: "What does calomel do and how does it do it?" one must depend partly on facts and partly on theory. The general condition of the patient is improved, the color becomes better, the pulse steadier and firmer, the tendency to coma is less, the bowels and kidneys both act more freely. In the throat it is observed that the spread of the membrane is limited or, at least, the rapidity of its spread is decreased; thick membranes become thinner and thin ones fail to become thick; extension of the disease into adjacent organs, especially into the larynx seems to occur but rarely after the system has been mercurialized. That this accounts for the lessening necessity for operative interference, on account of laryngeal stenosis, in the practice of those who depend upon mercurial treatment of the disease, I am thoroughly convinced.

The manner in which calomel, as well as other mercurials, such as biniodid, bichlorid, or cyanid, produces these effects, I take to be this: *a*, by a cholagogue action, the blood is relieved of toxic materials and the abdominal circulation is stimulated, thus preventing blood-stasis in the spleen and liver, where the final biologic product of the diptheria-germ is largely formed, such formation being favored by stagnation of the current; *b*, the sympathetic nervous system is relieved of the depressing influence of generally-diffused venous and capillary pressure due to stagnation of blood-flow; *c*, the heart itself is no longer gorged with unhealthy venous blood, and acts more freely and with greater force; *d*, the toxic materials in the blood and lymph have their activity lessened or are partly rendered inert by the coagulating action of the mercurials; *e*, the germs themselves are destroyed and the toxic materials contained in them partially neutralized by coagulation; *f*, the changes thus brought about in the blood lessen the tendency to fibrin-exudation, and consequent membrane-formation at the local disease-focus.

It will be noted that this explanation covers not only the therapeutic action of the calomel, but the systemic effect of the mercurial salts. I am in the habit of giving the bichlorid or biniodid (there seems to be no choice between them) in solution or in tablet triturate form, in doses ranging from one-thirtieth to one-tenth of a grain, every one, two, or three hours. For a child of from two to five years old I begin with one-thirtieth of a grain every two hours, lessening the interval to one hour after a few doses, and doubling or trebling the dose at the end of the first or second day. The aim is to bring the system under the influence of the mercury as quickly as possible. When this is done the disease ceases to advance. Then I hold the medication at the dosage reached, or lessen the dose or increase the interval of administration as the case demands.

Of all the cases I have so treated only one was ptyalized. The patient was a female, aged twenty-six, to whom I had been giving one-sixteenth of a grain of mercury cyanid every hour for about one week. Membrane covered the fauces and the palate to within one-half inch of the teeth. In twelve hours the membrane disappeared synchronously with the unheralded appearance of severe ptyalism. There was no re-formation of membrane, but the woman's teeth were loose for many months, and for weeks she had to take a simple "slop-diet." There was no necrosis, and the recovery was ultimately perfect.

Alcoholic stimulants are also of primary importance, here even in greater degree than in other septic diseases. No other remedy is known that is as potent and diffusible. If any other of equal efficacy is ever discovered alcohol may be given up, but not until then.

In the therapy of diphtheria this remedy serves a triple purpose: *a*, It is a stimulant of unequalled efficacy; *b*, it is a readily oxidized food; *c*, it is an antiseptic agent, both locally and systemically. In severe forms of diphtheria it is almost impossible to give too much of it. The dosage must be large, frequent, persistent; never at greater intervals than two hours, often at as short intervals as fifteen minutes, and sometimes, when the patient's vitality is at a very low ebb, its administration may be practically constant, the alcoholic stimulant being, properly diluted, continually administered by means of a medicine dropper.

It is frequently observed that the failing circulation regains its vigor, the sinking patient rallies, as the diffusible stimulant begins to be absorbed; while, as the effect of the dose wears off, the circulation again fails and vitality again becomes enfeebled. The amount of stimulant necessary is of course dependent upon the individual case, but must always be in excess of that given in other diseases. Many patients under six years of age require the administration of an ounce of whiskey every hour for from two to six days, and to several I have given double that quantity, the patients recovering.

I have never yet observed the slightest harmful effect from the administration of alcoholics in diphtheria. In addition to its long-known stimulant properties, and its ready oxidation in the circulation, recent biochemic research has led to the conclusion that in diphtheria, at any rate, it has a

distinct antiseptic action. The albumoses formed in the diphtheric membrane are precipitated and their absorption is prevented by alcohol. The germs themselves are devitalized and the toxic substances already absorbed are probably rendered partly inert by the action of the alcohol, after its absorption into the circulation.

Iron, in the form of the tincture of the chlorid, has long been a favorite remedy in all diseases accompanied by degeneration of the hematic elements. In diphtheria its beneficent effects have also long been recognized. But it is ordinarily given in too small doses. We must not lose sight of the fact that we are not dealing with a simple anemic condition, but with one of profound toxemia, which is acute in onset, malignant in action, and overpowering in its effects.

Remembering these facts, and the additional one that probably not more than half of what is given is absorbed, let us give iron in large enough doses to do good. To children from two to five years old I give from five to ten drops at least every two hours, often every hour; to adults never less than ten minims each hour, and frequently twice or thrice that amount.

The treatment of weak heart is but little different from that demanded for the same condition accompanying other diseases. Digitalis, nux vomica, and strophanthus are the indicated remedies, and to them may be added convallaria, nitroglycerin, caffeine, camphor, and musk; alcoholics are already being administered.

In those cases in which weak heart is practically due to hemorrhage it would seem that transfusion might be resorted to. At least the one-fourth per cent. saline solution should be injected subcutaneously or into the bowels. Such a case was No. CIX of those reported. The boy was eight years old and had apparently completely recovered from a severe attack of diphtheria in which the membrane affected the fauces, palate, and both cavities of the nose. He began to sink suddenly; vomited continuously; his pulse became thready, and disappeared at the wrist fourteen hours before death; his lips were ashen, and he complained of an intolerable thirst, but could not retain water in the stomach. Digitalis and nux vomica were freely given. Hot saline enemas were given, but failed to relieve, and he died thirty hours after the first sign of collapse.

The autopsy revealed only congestion and slight suppuration in each kidney, and about two pints of serous fluid free in the peritoneal cavity. These conditions did not seem to be sufficient to account for death. I have felt that the patient might have recovered if the saline solution had been injected into his veins. Certainly in another case like it I shall resort to the measure.

Albumin in the urine does not seem to me to be an indication that is of any value as bearing upon treatment. In almost all cases the patient is already taking so much medicine for conditions of greater urgency that I do not see that any added medication will be justifiable. Nor does it seem, except in cases of suppuration like the one just cited, that albumin in the urine will have any bearing upon the final result of the sickness. During convalescence, should the albumin persist, I see no objection to the administration of some mild diuretic, like liquor ammonii acetatis. It seems probable, however, that the medication already described is good treatment for albuminuria, and as that is usually being given anyway, the detection or non-detection of albumin is a matter of indifference, so far as modification of treatment is concerned.

An additional remedy for systematic use is hydrogen dioxid. Patients whose lips are bluish-black, and with evidently impeded circulation, are benefited by its frequent free administration.

The ten-volume or fifteen-volume solutions of this drug, as found in the market, are innocuous even in excessive dosage, provided that they are pure. When there is an excesss of acid present, the drug will irritate or even denude the healthy mucous membrane. Of a pure specimen of the drug I give from one to four drams every hour, with the result in many cases of bringing a healthier pink color to lips and cheeks. The oxygen held in solution in the preparation is probably given up in the system, with the effect of promoting perfect oxidation and toning up the vitality of the red blood-corpuscles. Hydrogen dioxid should not be administered in metallic spoons, as they lessen or destroy its activity.

Local Medication.—Recognizing germs as the primary cause of diphtheria, local treatment is directed as follows:

1. Destroy the germs.
2. Neutralize their active products.
3. Limit membrane-formation and destroy what is already formed.

As has been stated, the remedies already recommended for internal administration have a local antiseptic and deterrent action, which must be exerted to some slight extent upon the local disease-focus as they pass over it. This slight action is, however, far from being efficient or sufficient. Energetic measures should be directed to the local trouble. Mechanical removal of the membrane has not given good results, as the violence necessary to accomplish it does harm to the underlying tissues, and the measure itself is ineffectual, new membrane appearing after a few hours. Destruction of the membrane and adjacent tissues by means of the actual cautery has been recently proposed. The proposition seems reasonable, but it is not feasible.

The proportion of patients whose families would permit such an operation at a time when it would prove effectual is very small indeed. Cauterants, such as silver nitrate, ferric alum, carbolic acid, nitric acid, chromic acid and similar compounds, both in strong and weak preparations, have been urgently advocated by some practitioners as invariably successful in removing and preventing reformation of the membrane. I have used silver nitrate and carbolic acid with but little success, and ferric alum with absolutely no success. The other agents proposed for this purpose seem so unsuitable that I have not used them.

Mixtures of iodin and carbolic acid of about 2 or 3 per cent. have been used with success by some practitioners, and I have ventured to rely upon them in a few mild cases, which fortunately recovered. The medication seemed to have no real effect upon the membrane.

The medicaments which have given me the most satisfactory results have been hydrogen dioxid (from three-volume to fifteen-volume solutions), corrosive sublimate, 1:2000 solution, carbolic acid, from 1 to 2 per cent. solution, and lime water. Trypsin and extract of pancreas I have used both in solution and in powder. While efficient, they are not to be compared to corrosive sublimate or to hydrogen dioxid sprayed with an atomizer. These two remedies I find of the greatest efficiency, and they may be used together without trouble. Except occasionally in adults, I have altogether stopped using the swab, as the violence which it does to the tender surfaces of the throat, and the struggles necessary in order to use it, are of great harm to young children, doing more damage than the local medication does good. The atomizer is, perhaps, the most efficient instrument for local medication. All of its tubes should be of rubber; the mouthpiece should be long and stout, the tip broad and with rounded end, so as not to injure the throat. The water-oil atomizer I find most satisfactory.

Very recently, Dr. Williams (Boston *Medical and Surgical Journal*) has recommended the use of very strong solutions of hydrogen dioxid, from fifty to two-hundred volumes, for local application to the membrane. The argument in favor of this method seems most reasonable, but I have not yet had an opportunity to put it into practice. One posssible danger would seem to be that an agent of such a high degree of saturation would be a cauterant to the healthy mucous membrane.

Many authorities recommend the use of the atomizer, swab, or gargle, only every three or four hours. This seems to me, perhaps, as bad a recommendation as can be given. In severe cases no medication can be of effect in thinning the membrane or in preventing its spread, which is not repeated, at least every hour, and in a large number of cases it is necessary to spray the throat at least every half hour or every fifteen minutes. This will require the constant attention of the nurse, but it will often save the patient.

When the nose is affected it should be syringed frequently. For this purpose the same solution may be used as for the throat, but I have found that in the nose the 1 or 2 per cent. carbolic-acid solution is better tolerated by the patient. The wash should be used at least every hour. In forty-five patients with nasal diphtheria this treatment was used, and twenty-four of them (53 per cent.) recovered, while of those who died (twenty-one), two-thirds had laryngeal membrane as a complication.

Thin flakes of membrane, which persist for a long time after the general disease has abated, are best treated by some mild local caustic. The double chlorid of gold and sodium, in 2 per cent. solution, has been of service to me in such cases.

Enlarged cervical lymphatics and enlarged tonsils, which occurred in about 10 per cent. of the observed cases, have yielded most readily and without suppuration, except in two instances, to inunctions of unguentum hydrargyri.

The sequelæ of diphtheria are quite varied. Transient peripheral paralyses are the most common, and may be named in order of frequency as follows: The palatal muscles; the ocular muscles; the peronei, and the tongue. Multiple palsies are rare.

One patient of mine, Case LXVII here reported, a child one year old, made a perfect recovery from the diphtheria, but died three months afterward with what was shown by the post-mortem examination to be a general myelitis. Dr. Eskridge observed this case and now has the specimen.

Since adopting the general methods of treatment which I have described, and especially since beginning the free use of mercurials, paralyses have been quite infrequent in my experience, and it seems probable that the treatment is to be credited with this result. One peculiar case of paralysis seems worthy of record here, as it at first seemed to be truly diphtheric, and illustrates, perhaps, a common error in diagnosis. An infant under observation by Dr. Sewall and myself had a severe attack of diphtheria, and immediately after recovery one leg was useless. Dr. Sewall diagnosticated diphtheric paralysis. I examined the babe, and, from a certain tenderness and fixation of the hip joint, diagnosticated accompanying incipient hip-joint disease. The hip symptoms soon disappeared, however, and I "revised" my diagnosis and agreed absolutely with Dr. Sewall. Treatment seemed unavailing, and after several months we placed the child under Dr. Eskridge's care. His diagnosis was peripheral cerebral hemorrhage. Under appropriate

treatment the cerebral clot was absorbed and the paralysis disappeared.

Diphtheric pneumonia sometimes occurs, and is usually fatal. The only cases that I have observed were two, both in children two years of age, and both of doubtful diagnosis. They were the first of the family to be taken sick. In neither case could I discover membrane, but both died within a short time. In each family there subsequently occurred several cases of undoubted diphtheria. My experience has thus not been in accord with the generally and undoubtedly accurately recorded cases in which the pneumonia has accompanied or followed the diphtheria.

The total number of cases of which I have preserved notes as to treatment is 117; all but about half a dozen of the mildest ones having been treated systemically upon the plan outlined in this paper.

Of the 117, but eighteen patients, or 15.3 per cent., died.

When it is taken into consideration that many of the cases were seen only after several days of neglect or of careless treatment, and that a comparatively large percentage of the cases were of the kind usually described as malignant, the death-rate is to be considered low. That the medicaments employed had something to do with the low death-rate I am convinced; and the frequency of their administration is an item not to be overlooked. Indeed, if there is one point to be insisted upon with unyielding urgency, it is this of large dosage at short intervals in cases of diphtheria. The directions given by some authors to spray the throat every three or four hours, or to give iron or whiskey three times a day, or perhaps every four or five hours, are admirable examples of "how not to do it." It is to be hoped that that kind of teaching and of practice will soon pass away.

In conclusion, I wish to say that there are many other diphtheria remedies which I have tried and found useless and hence have not mentioned. There are many others highly recommended as curative in all cases. These I have not tried, for their alleged unvarying success leads me to the conclusion that they have not been used in the treatment of genuine diphtheria.

It is probable that in a long series of cases, covering several years or several epidemics, no medication now known gives results much better than 85 per cent. of recoveries.

The Proportion of Tuberculous Meat, in nine German cities, varies from 10 to 26 per cent. In England the average is 12.22, that of the London supply being 15 per cent. Bulls and young cattle are almost free, the highest ratio being in cows, which in Midlothian reaches as high as 22 5 per cent.

ALBUMINURIA IN THE APPARENTLY HEALTHY.[1]

By W. H. WASHBURN, M.D.,
of Milwaukee, Wis.

The subject of albuminuria in the apparently healthy continues to be one of considerable importance and interest from more points of view than one. We want to know upon what if any, pathologic condition, of the kidneys or other organs of the body it depends; we want to know what the prognosis is likely to be in a given case; and above all, we are anxious to know if there is any method of management, hygienic or medicinal, which holds out any prospect of resulting in cure.

There has been going on now for some time a dispute as to whether the fluid part of the urine is a filtrate or a secretion. Great interest attaches to this question from the point of view we occupy, for, if the fluid is merely a filtrate, then we may reasonably assent to the opinion that albumin may under some circumstances appear in the urine in the absence of any structural change in the kidney. On the other hand, however, if the fluid is a secretion, we must assume that the secreting structures are endowed with the power of selecting certain elements from the blood and rejecting others; hence, according to this view of the case, the presence of albumin in the urine would invariably indicate structural change in the secreting organ.

A reference to the literature of this subject, since I read my first paper thereon three years ago (The Medical News, April 5, 1890), shows a gradual swing of the pendulum of opinion. For some years previously to that time the tendency had been to regard traces of albumin in the urine as of no particular significance, so far as they might indicate structural change in the kidneys themselves, or from a standpoint of prognosis. Many opinions were on record favoring the issuing of life-insurance policies to men presenting this symptom. At the beginning of this study, some fifteen or eighteen years ago, albuminuria was regarded as synonymous with nephritis, and the prognosis, therefore, necessarily unfavorable. Here was one extreme. When, however, it was found that many of these cases, instead of dying, continued to live, in many instances for years, without developing further unfavorable symptoms, the idea began to take root that albuminuria was not such a grave symptom after all. Gradually, with increasing data, it began to be urged that the presence of albumin in the urine of apparently healthy persons was quite an ordinary thing, and some went so far even as to urge that a small amount of albumin in the urine was a normal condition. But there seems to be a

[1] Read at the meeting of the Milwaukee Medical Society, January 24, 1893.

modifying of these opinions, which were both probably extreme, and we are now undoubtedly more nearly on the right track than ever.

A discharge of muco-pus from the lungs is never a normal occurrence; it may persist for a few days and pass away, and the patient exhibit no further pulmonary symptom, but if the discharge becomes chronic or permanent, then there is something serious the matter. So with albuminuria. I believe that its occurrence is, in every instance, an indication of an abnormal physical condition of the kidneys themselves. It may be transitory in many instances, as will appear in a number of cases I shall detail further along, and never recur, the kidneys suffering no permanent injury from the condition that produced the symptom; or, on the other hand, it may persist for a considerable time—twenty years or more—the probability of cure diminishing with the lapse of time, and the probability of further evidence of structural changes in the kidneys increasing.

We are told that the exciting causes of the form of albuminuria under discussion are: first, diet; second, cold and cold bathing; third, muscular exertion; and fourth, mental strain. I apprehend that all of these several causes act in very much the same way to produce this condition.

As to the dietetic causes: Many experimenters have studied the effects upon the urine of the ingestion of large quantities of egg-albumen. The results have been somewhat uncertain—in some individuals albumin appearing in the urine, and in others not. And the results are still more uncertain for the reason that many of the persons submitting to the experiment were not in apparently good health, in several instances the experimentee afterward dying of chronic nephritis, or a post-mortem examination after death, from other causes, reveal ing structural changes in the kidneys.

In the case of animals the results are more definite. Dogs have been the favorite animals upon which studies have been made, and the egg-albumen has been introduced by way of the stomach, rectum, and subcutaneous injection, albuminuria resulting from its introduction by all of these avenues. This, of itself, would not prove much, but when the dogs have been killed while suffering from the albuminuria, and the kidneys were examined, it has invariably transpired that a condition of glomerulo-nephritis was demonstrated.

Other articles of diet have been observed to give rise to albuminuria, as, for example, cheese, buckwheat cakes, etc., and it may readily be supposed that when these or other articles of diet are consumed in such quantities as to disturb the digestive process, they may give rise to albuminuria in the same manner as it was shown to result from the ingestion of egg-albumen; or individual idiosyncrasy may account for it.

I believe also that when albuminuria follows exposure to cold or cold bathing, the *modus operandi* is identically the same. I reported one case of this kind three years ago.

The other enumerated causes were muscular exertion and mental strain. Muscular exertion increases the amount of labor thrown on the kidneys in the elimination of the products of retrograde metamorphosis, and in certain individuals may give rise to a transient glomerulitis with accompanying albuminuria. In the case of mental strain the effect is produced in a less direct manner. The primary effect of mental strain, such as is undergone by students in the preparation for examinations, professional men in their multifarious duties, or of severe mental anxiety from any cause, is upon the digestive organs: the stomach and intestines. Digestion is interfered with; the action of the bowels becomes imperfect, so that costiveness or constipation, or both, result; and as a consequence of the resulting presence in the blood of toxic substances, a more or less marked glomerulo-nephritis, with accompanying albuminuria, may follow, which disappear as soon as the patient returns to his normal condition as to digestion. I detailed a case of this kind three years ago, and shall mention more particularly another case in this paper.

We are told that mucin may appear in the urine to such an extent as to respond to the tests for albumin, when there is no serum-albumin in the urine, and that, therefore, it is important for purposes of prognosis to distinguish between albuminuria and mucinuria. I am not in accord with this view, for it is a perfectly fair supposition that in every case of albuminuria there has been a time in its progress when there was an increased amount of mucin in the urine. The renal epithelium being called upon to exercise an unusual activity in the conversion of the albuminous blood-constituents, there would almost of necessity result an increase of the physiologic product, mucin, and hence mucinuria is not only a frequent concomitant, but is probably also a precursor of albuminuria. Therefore, mucinuria must always be regarded with suspicion, and so far as treatment or prognosis is concerned a differential diagnosis between the two is a matter of small practical importance.

I have now on hand, up to January 1, 1893, the records of 1070 urinalyses made in the course of life-insurance examining, and have encountered in this number 38 cases of albuminuria, being in the proportion of 3.55 per cent. These thirty-eight cases may be thus tabulated:

Two died of chronic nephritis; one four years, and one three years after examination.

Four suspected to have chronic nephritis at present, after intervals of from one to four years after examination.

One died of pulmonary tuberculosis fourteen months after examination.

Six were completely lost sight of.

Fourteen are known to be living and in apparent health, after intervals of from one to five years after examination, but the present condition of the urine is unknown, three of these cases being associated with cardiac lesions.

Two are known to be still albuminuric; one of about six months' and one of about four years' standing.

Six are known to have recovered.

Three are known to be still albuminuric, and now under my care, one for two years, one for eighteen months, and one for six months.

In addition to these thirty-eight cases I desire to include in this report two additional cases that came under my care, having been found to be albuminuric on examination for life-insurance, but not having been first examined by me. Including these two cases and the last two groups in the table given, I have eleven cases to detail.

Cases I, II, and III are the three cases reported three years ago, and which have remained well ever since, recent examinations showing the urine to be perfectly normal.

Case IV.—W. G. B., aged thirty-five, of good family and personal history and habits, invested all the savings of his life in a new and uncertain enterprise, which he managed personally. To provide for his family in the event of his untimely death and failure of his business project, he applied for life-insurance, when he was found to be albuminuric; his digestion was impaired; and he was suffering from intestinal flatulence, the microscope showing numerous crystals of calcium oxalate in the urinary sediment. This condition lasted for about six months, when, his business proving very unexpectedly successful, he recovered completely.

Case V.—L. J., a teamster, aged twenty-five, in whose case no particular cause was assigned, and only a few examinations were made, the albumin disappearing from the urine after one week without any treatment whatever.

Case VI.—H., aged thirty-one years, of good family and personal history and habits, had just successfully passed his examinations for a medical degree, and the albuminuria may have resulted from the mental strain incident to that interesting period in his life. The condition persisted for three months after I first discovered it, and then disappeared, and for the past five months his urine has been normal.

Case VII.—H. C. B., aged twenty-seven years, a principal of one of the city schools, had had no previous disease, except pneumonia at the age of twelve years. His parents are living and in good health. His grandparents all reached old age. Albumin was discovered in his urine April 25, 1891. This case seemed to me, at first, to be one of what Pavy has called cyclical albuminuria, for, on several examinations of the urine first passed in the morning, there was no trace of albumin, but later in the progress of the case it was found in the morning urine, as well as in that passed at other times in the day. Physical exercise has always appeared to increase the amount. No appreciable effect has followed the ingestion of food of any kind. Microscopic examinations have been made very many times, always with negative results. The quantity of urine voided daily was perfectly normal, and its specific gravity ranged from 1016 to 1027, but has generally been from 1020 to 1022; and the amount of urea excreted has been practically normal, ranging from 366 grains to 512 grains per day. There have been perhaps a dozen days during the past two years on which there has not been a trace of albumin in the urine, but with these exceptions albumin has been invariably present, though in small amount, which, as already stated, appeared to be slightly increased by a brisk walk. This gentleman suffered from habitual constipation, but otherwise was in a perfectly normal state of health. Correction of the constipation, however, did not appear to exert the slightest influence upon his albuminuria.

Case VIII.—Geo. W., aged seventeen years, is employed out of doors, and is of good family and personal history and habits, his physical appearance indicating robust health. He was examined October 25, 1891, and found to be albuminuric, the amount being comparatively large. This case has now been under observation fifteen months, and during that time quite a large number of examinations have been made. The first urine passed in the morning has never, at any of the examinations, contained albumin. The largest amount ever found was on one cold day in November, 1891, after a long ride on horseback. Microscopic examinations of the sediment have always been negative and the daily amount of urea excreted has been about normal. He has never complained of any subjective symptoms, except on irregular occasions, and then constipation and imperfect digestion were the complaints. On several occasions during the past autumn I have found the urine free from albumin.

Case IX.—J. A. G., aged thirty-six years, is a bookkeeper, of florid complexion and robust appearance, fond of athletic sports. His family and personal history and habits are good, except that there is a slight family predisposition to gout. In childhood he fell from a trapeze, injuring his back to such an extent as to produce osteitis and ankylosis of several of the lumbar vertebræ, but this condition of things has never been an inconvenience to him in any degree whatsoever, and he has always taken a good deal of exercise in gymnasia, and is an enthusiastic lover of foot-ball, which game he frequently engages in. Albumin was first found in his urine August 5, 1892, and since that time frequent examinations have been made. The total amount of urine passed daily has ranged from forty to sixty-six ounces. The specific gravity of the

daily amount has always been 1019 or 1020, and the daily amount of urea has ranged from 432 to 726 grains. The microscope has revealed hyaline tube-casts on several occasions; also numerous crystals of uric acid.

CASE X.—W. G. N., aged thirty-two, is of good family and personal history and habits. He came under my observation first on May 5, 1889, having learned, upon applying for life-insurance two years before, that he was albuminuric. For a period of more than a year I watched this case closely, and it is still under observation, though examinations are now only made about once a month. The amount of albumin passed has never been very large. During the six months following the first examination, the first urine passed in the morning was very frequently tested and always found to be free from albumin, but on nearly every other occasion albumin was found in considerable quantity. Microscopic examinations always showed numerous crystals of uric acid, very often crystals of calcium oxalate, and occasionally epithelial cells. The specific gravity was always above 1020 and occasionally as high as 1027. Recent examinations have shown that the albumin still persists in the urine, but the microscope does not as yet show any casts. This, therefore, is a case of more than six years' standing and would appear to be a case of "cyclical albuminuria."

CASE XI.—W., aged twenty-eight years, healthy in appearance and of good antecedents, found, on applying for life-insurance last August, that he was the subject of albuminuria. I had examined him for life-insurance on two previous occasions, when his urine was found to be normal, the last examination having been made about two years ago. This is the case of a medical man who is doing a very large and trying practice, who has but little open-air exercise, but who, nevertheless, supposed himself to be in perfect health until it was found that he was suffering from albuminuria. His digestion was and is fairly good; his bowels are rather inclined to be costive—in fact, this condition has been so decided that he has twice been the victim of a fissured anus. The morning urine is not always free from albumin, but has usually been normal, and on perhaps two or three occasions, since last September, the urine has been found to be normal during the day. The microscope has only revealed crystals of uric acid and calcium oxalate. From December 1st to December 10th, there was no albumin found in any specimen of urine examined, and during this time the bowels appeared to be in a more nearly normal state of activity than for some months.

The chief interest in these cases centers in Cases VII, VIII, IX, X, and XI. We may, perhaps, be able to diagnosticate Case X as one of cyclical albuminuria, but it seems to me as though the others must be classed as simple persistent albuminuria. In Case IX, in which we have a history of family predisposition to gout, with gouty manifestations in the patient himself, and excess of uric acid in the urine, we may be justified in the opinion that the man is in the early stage of arterio-capillary fibrosis, and the case must, therefore, be treated as one of incipient nephritis. Case VIII will probably recover; he is now but eighteen years of age, and there have been several occasions on which his urine was normal, it being a noticeable fact that it has been much more albuminous in the winter than in the summer months. Cases VII, VIII, IX, and X have all been treated with various drugs, and have, at times, been placed on diets that restricted the amount of nitrogenous foods, but all apparently to no purpose. They all for several months took strontium lactate in doses of thirty grains three times a day, without the slightest appreciable result. I was led from what I saw in the current medical literature, to expect that some good might result from the administration of the strontium salt, but my experience with it has been very disappointing, not only in these cases, but in several cases of chronic nephritis. General, tonic, and alkaline treatment has been as barren of good results. Saundby says that no cases of albuminuria afford a better opportunity for testing the influence of drugs than those of simple persistent albuminuria, such as are so often met with in the course of life-insurance examining; that although he has met with many such cases, he has never succeeded in curing one of them; that after a few months of unsuccessful treatment, they have usually been lost sight of. You will see by reference to my table that I cannot claim any better results than these; and among those cases in which the albumin has ultimately disappeared from the urine, it is more than doubtful if any drugs employed exercised any influence to that end.

So far as prognosis is concerned, we are no further advanced than we were when Professor Grainger Stewart's *Lectures on Albuminuria* were published in 1888. In these lectures Stewart teaches that in the form denominated *paroxysmal* there is a slight tendency to renal disease; that this result is less likely in those forms due to muscular exertion and to diet, while in the simple persistent form the outlook is less hopeful; though so long as the solids excreted are normal in amount and no vascular changes appear, there is hope. I think, however, that the opinion expressed by Lecorché and Talamon will be acquiesced in by those who have had opportunities to see much of this condition. Their opinion is as follows: "It is impossible to attach any prognostic value to the presence of albumin in the urine. Albuminuria indicates an alteration of the glomerular filtering membrane, transient or permanent; abundant or minimal, it indicates nothing else; it affords us no information as to the profundity and extent, and consequently none as to the gravity of the lesion. To form an opinion of this,

other elements of appreciation and other phenomena, general and local, must be considered conjointly with the albuminuria."

It is not my intention at the present time to enter into a discussion of the question of prognosis; I hope at some future time to make that the subject of a paper, but when we reflect that interstitial nephritis, with considerable proliferation of connective tissue, may continue for some time before tube-casts or renal epithelium appear in the urinary sediment, we shall see that the mere fact that the microscope fails to reveal these elements cannot be assumed to prove that no serious structural changes exist. In the tabulated statement already made, two cases appear which terminated in death from chronic nephritis, one in three years, and one in four years, after examination. In both these cases, repeated microscopic examinations made during several months failed to show any casts or cellular elements in the urinary sediment.

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EXPERIMENTS WITH COCAINE PHENATE AS A LOCAL ANESTHETIC.

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So much has been written of late concerning the deleterious systemic effects of cocaine hydrochlorate when used topically upon the mucous membrane or injected by means of the hypodermatic syringe, especially in patients who have organic lesions of the heart or kidneys, that we hesitate to employ it in many cases for fear there may be some idiosyncrasy and that the full physiologic action of the drug may be manifested.

Alarming symptoms often arise from its use, and one often wishes for a drug that would give us the local anesthesia without the probability of the systemic effect.

At the present time it is next to impossible to treat successfully diseases of the eye, nares, pharynx and larynx, or to perform operations upon these parts, without the aid of cocaine; therefore, the manufacturing chemist has been trying to produce some preparation that would possess the advantages without the disadvantages.

On account of the great similarity between the local effects of cocaine and those of phenol, both agents causing local anemia and anesthesia, and because it had been proposed to make extemporaneous mixtures of the two drugs to lessen the systemic effect of the former, it occured to Von Oefele [1] to combine the two substances in such a way as to form a salt perhaps, would have the anesthetic action of both, with the slow-absorbing power of the latter.

In cocaine phenate I believe we have this desired result. It is prepared by Merck, and his description [2] is as follows: "It is a slightly colored substance of *thick-honey consistency*, which readily melts when heated, and whose percentage of cocaine alkaloid is 75. It is readily soluble in a 50 per cent. solution of alcohol. The solution has a faint odor of carbolic acid."

It is extremely deliquescent, my attention having been directed to this quality by my friend Mr. Swartley, who prepared the various solutions for me; it is also soluble in albolene, one of the bland oils produced from the coal-tar group. The dose is from gr. $\frac{1}{12}$ to gr. $\frac{1}{6}$ by the stomach. Locally, "it coagulates the albumin in the tissue, preventing the absorption of the cocaine, thereby prolonging the anesthetic effect and lessening the danger of systemic poisoning." [3]

In this combination, therefore, we possess, theoretically, a drug which has local anesthetic properties with slow-absorbing power, and which should also be slightly antiseptic.

Determining to test for myself the properties of the drug as far as the effect upon mucous membranes was concerned, I had prepared alcoholic solutions and solutions in albolene.

My first experiment was upon my own eye.

The Eye.—On the lower lid of my left eye I placed one drop of the alcoholic solution of 4 per cent. strength, and, as anticipated, experienced a severe burning pain compelling me to close the lids immediately. Upon opening them there was found intense hyperemia of the conjunctiva, lachrymation, and slight photophobia.

[1] Merck's Bulletin, June, 1891, p. 77.

[2] Ibid., February, 1890, p. 10.

[3] Hare: Therapeutic Gazette, January, 1893, p. 19.

In two minutes another drop was placed on the same lower lid, and the symptoms were similar, though not so severe. In four minutes from the time the first drop was instilled there was anesthesia of the conjunctiva of the lower lid, of the lower half of the cornea, and of the corresponding ocular conjunctiva—these being the parts with which the substance had come in contact. The anesthesia lasted for six minutes, and then gradually disappeared. The pupil was very slightly dilated. There were muscular twitchings in the lower lid similar to those caused by an instillation of a solution of eserine, but not so severe or so prolonged in action.

On the lower lid of the other eye the experiment was repeated with a 4 per cent. solution of the drug in albolene. When the the first drop was instilled there was a slight stinging sensation which caused me to close the lids, but lasting for an instant only. The conjunctiva was found to be paler than before the instillation. There was no lachrymation, and no photophobia. In two minutes another drop was placed upon the conjunctiva, and the immediate effect was barely noticeable. In five minutes after the first instillation the conjunctiva of the lower lid and of the lower half of the eyeball was more anemic than before the experiment, and, in addition, the lower half of the cornea was anesthetized so thoroughly that pledgets of absorbent cotton and tissue paper could be rubbed against the parts without producing any sensation whatever. Sensation did not begin to return until ten minutes from the time its absence was first noticed, or fifteen minutes from the beginning of the use of the solution.

The pupil was widely dilated and gradually increased in size for about forty-five minutes, when it had reached the maximum. It was not reduced to the size of its fellow until the following day, though the experiment was conducted early in the morning.

There was no paralysis of accommodation in either eye, but the "range" was changed, the near point being carried farther from the eye—in the eye upon which the last experiment was conducted it being about four inches in front of the original near point. My distant vision was slightly impaired, the letters appearing somewhat hazy, though I could still read 20/XX with very little difficulty.

The palpebral fissure was not appreciably enlarged in either eye, and there was no ptosis. The same character of twitching of the muscles of the lower lid was observed as in the other eye.

On the following day, I endeavored to ascertain whether, in the last experiment, it was the cocaine phenate or the albolene that produced the slight burning sensation when first introduced, and for this purpose placed a drop of albolene on the same part of the conjunctiva that, on the preceding day, had been touched by the solution of cocaine phenate in albolene. The result was entirely negative; there was no greater sensation than if a drop of distilled water had been used; thus proving to me that it was the cocaine phenate that caused the peculiar burning sensation when the solution in albolene was introduced, and that this solution had given me the true effect of the drug upon the eye.

THE MOUTH.—With a 4 per cent. solution I brushed the right half of my tongue from the tip as far back as I could well reach. In from two to three minutes the anesthetic action had begun; there was decided numbness of this side. In five minutes the application was repeated, the tongue being held out of the mouth as long as possible, to prevent the saliva from washing the solution away. In five minutes more—ten minutes from the beginning of the experiment—the right side of the tongue was so numb that an instrument drawn over it could not be felt. I then scratched my tongue on the right side with a pointed instrument, and, though the procedure was appreciated, it gave me no pain, as did the same procedure upon the opposite side. Next, I touched the right side of my tongue, at different times, with solutions of sugar and strychnine, but could not perceive the taste, though easily recognized on the left side. The numbness had disappeared and the taste returned in twenty minutes from the first application.

At another time I painted my lips and my gums, and the same anesthetic effect was produced, which reached the maximum in about ten minutes, and had entirely disappeared in twenty minutes.

THE NARES.—In the nares I sprayed some of a 4 per cent. solution in alcohol, and the anesthetic effect was more marked than on the mucous membrane of the mouth. At first there was a stinging sensation, similar to that produced in the conjunctiva, which I attributed, for the most part, to the alcohol in the solution, as spraying the other side of the nose with a solution in albolene, of the same percentage, did not cause more than a momentary burning sensation. The anesthetic effect of the latter solution came on a little later than that of the former, though, as far as could be judged, it reached the same degree of intensity. With the first solution the parts were benumbed almost from the first, the loss of sensation reaching a maximum in about eight minutes, and disappearing entirely in about fifteen minutes. By thoroughly spraying my nasal cavity with my head in such a position as to allow the solution to come in contact with the upper parts, where the terminal filaments of the olfactory nerve are situated, I was able to impair, but not to destroy, the sense of smell. This was destroyed at another time by the use of an 8 per cent. solution, and returned in eight minutes after it had disappeared.

THE LARYNX AND TRACHEA.—In my own larynx and trachea I was unable to test the effect of the drug, but this was done upon two of my patients, the larynx of one being tuberculous, that of the other being perfectly healthy. In the former, the use of a spray of a 4 per cent. solution of cocaine hydrochlorate, in the larynx and trachea always caused giddiness, slight nausea, nervousness, and insomnia, which lasted during the day and night following the application. Upon spraying this patient's larynx with a 4 per cent. solution of cocaine phenate, I could not produce as great an anesthetic effect as with the hydrochlorate, so I increased the percentage, employing a 6 per cent. and then an 8 per cent. solution. The 6 per cent. solution of the phenate caused about the same effect as the 4 per cent. solution of the hydrochlorate, but the anesthesia, as far as I could judge, lasted a little longer from the use of the former drug. With the aid of this solution I was able to make applications to the tuberculous ulcers in about eight minutes after spraying the larynx.

In the larynx of the healthy patient, the anesthesia was produced in about the same time. In neither case was it possible to say when the effect had entirely disappeared.

While intra-laryngeal medication was facilitated by the use of cocaine phenate, spasm was not prevented, and in this respect the action is similar to that of the hydrochlorate.[1]

THE URETHRA.—Through the courtesy of one of my surgical friends, I made some observations in the case of a patient in which bougies were being employed for the gradual dilatation of a stricture of the urethra, the canal being so extremely sensitive that at times the bougies could be passed but a short distance beyond the meatus.

I introduced a dram of a 4 per cent. solution of cocaine phenate in albolene into the urethra, holding it there for five minutes, when a No. 30 steel bougie (French scale) was passed without any difficulty, the patient's statement being that he could "feel something," but that was all.

THE EAR.—For the sake of making my experiments complete, I regret that I have not had an opportunity, since using the drug, to perform some operation on the ear under the anesthesia produced by it. Suffice it to say that no difference could be distinguished between its action and that of the hydrochlorate, when a drop was placed in the external auditory canal.

Reports of the successful use of cocaine phenate hypodermatically have been published by Vian[2] and by Kyle,[3] though Von Oefele states that he has not yet found a suitable solvent for this mode of administration, the alcoholic solution which he used causing severe pain. I have not had any opportunity to try the albolene solution in this manner, though I believe it will be less painful than the alcoholic.

The one quality in particular that has been claimed for cocaine phenate is that it produces the local anesthetic effect, without any systemic effect; so it is to be hoped that those members of the profession who have patients presenting an idiosyncrasy to the local use of the hydrochlorate will give the phenate a trial, and report the results.

My employment of the drug beyond experimental purposes has been confined to the treatment of diseases of the eye, ear, throat, and nose.

The following are the reports of some cases in which the drug was used:

CASE I.—Male, aged forty-one years, of tuberculous family history; was referred to me by a medical friend for treatment of a constant hacking cough, there being no change in the pulmonary signs from the normal. Upon examination, laryngeal tuberculosis was found, accompanied by some ulceration. The man was immediately placed upon the customary treatment; but upon receiving the spray of cocaine hydrochlorate, of 4 per cent. strength, prior to the intra-laryngeal applications, he always became dizzy, nervous, irritable, and could not sleep well during the night which followed. This occurred after every application. When a solution of cocaine phenate, of 5 per cent. strength, was substituted, none of the symptoms noted was present, and the patient noticed the marked difference at once. The latter solution has been in use on this patient for some time, and there has not yet been noticed the slightest systemic effect.

CASE II.—Male, aged thirty-eight years, with a tuberculous history, came for the treatment of harassing cough and irritable throat, which had existed ever since patient had had influenza, ten months before. Examination showed extensive ulceration of the right vocal band, tuberculous in character, and a beginning laryngeal tuberculosis. Using a solution of cocaine hydrochlorate of 5 per cent. strength, I anesthetized the band and surrounding parts as thoroughly as possible prior to using the curette, and while performing the operation, symptoms similar to those displayed in the preceding case, but much more severe, supervened. After this, whenever the throat was sprayed with cocaine hydrochlorate, slight nausea, vertigo, and insomnia followed. A 6 per cent. solution of the phenate was substituted, and there have been no unpleasant symptoms since, though I use it two or three times a week for making applications, and have thoroughly anesthetized the parts twice with it for the purpose of curetting the ulcer.

CASE III.—A female, aged twenty-two years, of good history, presented herself for treatment of the throat, which she was constantly "clearing." I found large follicles in the pharynx, on which I used the galvano-cautery, having first sprayed the throat

[1] J. M. Da Costa, THE MEDICAL NEWS, December 13, 1884.
[2] Nouveaux Remèdes, 1887, p. 192.
[3] Therapeutic Gazette, January, 1893, p. 18.

with a 4 per cent. solution of cocaine phenate. The result was fully as satisfactory as in the cases in which the hydrochlorate had been used.

CASE IV.—A male, aged twenty-six, had chronic hypertrophic rhinitis. I found a large inferior turbinated bone almost occluding the right nasal cavity which, without any difficulty, was removed by the aid of a 6 per cent. solution of cocaine phenate.

CASE V.—A male, aged forty-two, had had a foreign body in cornea for twenty-four hours. There had been unsuccessful attempts at removal. I instilled three drops of a 4 per cent. solution of cocaine phenate, and removed the particle with my spud, very easily and without pain. The drug also seemed beneficial in breaking up the conjunctivitis which was necessarily present.

CASE VI.—A female, aged twenty-eight, with an ulcer of the cornea of six weeks' duration. After using two drops of a solution of cocaine phenate of 5 per cent. strength, which was repeated in five minutes, I was able in ten minutes from the first instillation to cauterize the ulcer with the actual cautery without the patient suffering any pain.

CASE VII.—A male, aged ten, with convergent strabismus. I instilled a solution of cocaine phenate of 6 per cent. strength, and divided the internal rectus of the right eye with as little pain as is experienced when the hydrochlorate is used.

Though the cases cited are few in number, the drug has been used by me in many others with equally good results. From the foregoing experiments and cases it seems that the following conclusions are justifiable:

1. In cocaine phenate we have a drug that can be successfully used, without producing systemic effects, in those cases in which there exists an idiosyncrasy to the local use of cocaine hydrochlorate.

2. As good an anesthetic effect can be produced with cocaine phenate as with cocaine hydrochlorate, but stronger solutions are required to produce the same degree of anesthesia.

3. The anesthesia does not come on so quickly with the phenate as with the hydrochlorate, but lasts fully as long, if not longer, than the anesthesia from the latter.

4. In some cases, though there be no physiologic contra-indication to the use of the hydrochlorate, the phenate is to be preferred on account of its antiseptic properties.

125 NORTH SEVENTEENTH STREET.

The Use of Tuberculous Meat.—In Prussia the flesh of tuberculous animals is allowed to be sold if the animal was in good condition; if the tuberculous nodules are found exclusively in one organ; or if two or more diseased organs are in the same cavity of the body, or connected directly with one another by lymph-vessels or bloodvessels not belonging to the general circulation, but to the lungs or portal venous circulation.

THE IDENTITY OF THE PROPRIETARY, SO-CALLED "HYDRO-NAPHTHOL" AND IMPURE BETA-NAPHTHOL.

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With a Special Report of an Analysis of Hydro-Naphthol.

BY CHAS. P. BECKWITH,
OF DETROIT.

MY attention was originally called to hydro-naphthol about 1886, by an extensive paper by Dr. G. R. Fowler, running through several issues of the *N. Y. Medical Journal* in the latter part of the preceding year. Of the chemistry of the phenols here receiving attention, hydro-naphthol, described as a new and promising antiseptic, a derivative of beta-naphthol, was assigned a definite chemical position. Dr. Fowler reported a series of bacteriologic experiments, undertaken at Johns Hopkins University, attesting the position of hydro-naphthol as an antiseptic and disinfectant.

At that time I had not used the naphthols internally, having imbibed the idea that they were poisonous. Naphthalin, after considerable trial, having disappointed me as a therapeutic agent in conditions in which an intestinal antiseptic was desired, I resorted to hydro naphthol, understanding that it was totally free from the toxic effects said to be possessed, to a high degree, by alpha-naphthol and beta-naphthol.

For several years I have used hydro-naphthol freely in gastro-intestinal ailments of supposed bacterial origin. Beta-naphthol, under its true name, I have prescribed little, and alpha naphthol not at all, the impression remaining that their use was unsafe. Early in last autumn it occurred to me, for reasons I have elsewhere detailed,[1] that hydro-naphthol might be of great utility as a prophylactic against cholera and of value as a remedy for the developed disease. Some experiments were then undertaken at my request, to determine its antiseptic and disinfectant value on the cholera-spirillum. These demonstrated that it possessed considerable power in this direction. This caused me to believe that we probably had in hydro-naphthol a remedy of extraordinary value for the purposes named.

On looking more closely into the chemical position of hydro-naphthol, I soon after learned, what, if I had originally known, I had forgotten, that hydro-naphthol was a proprietary preparation, and that the opinion was entertained in some quarters that it was simply impure beta-naphthol. At first I was unwilling to believe the latter, fancying that the statement rested on no adequate

[1] THE MEDICAL NEWS, September 17 and October 1, 1892.

evidence, not then being aware of Merck's investigation of the subject. The fact, however, of hydro-naphthol being a proprietary preparation, and the result which might ensue were it to be found as useful in cholera as I fancied, caused me to initiate a general investigation of the other naphthols.

Early I came across an account of Bouchard's thorough investigation of the physiologic effects of beta-naphthol, in which its entire innocuousness, as a remedy, was shown. This made me the more desirous of ascertaining its behavior toward the comma-spirillum, for I did not then feel certain of the aforesaid asserted identity. Besides which, alleged manipulations of beta-naphthol to obtain hydro-naphthol being secret, it might readily follow that the composition of the preparation had been recently changed.[1] I was, however, unable to obtain an investigation of the action of beta-naphthol on the comma-spirillum until very recently, when Dr. Sternberg kindly undertook it for me, making a thorough examination of the antiseptic and germicidal power of alpha-naphthol, beta-naphthol, and a salt of the latter, beta-naphthol benzoate.[2] Pending this investigation, I sought to discover the actual chemical relationship of the so-called hydro-naphthol to beta-naphthol. Inquiry of the proprietors of the preparation provoked the unsatisfactory but suggestive rejoinder that hydro-naphthol was not *sublimed* beta-naphthol. The more recent pamphlet on hydro-naphthol, which I had received, did not assist in clearing the difficulty. The proprietors describe their preparation as a hydroxid of beta-naphthol, a hypothetic compound which is not known to exist.

Some statements in this circular concerning the highly toxic qualities of beta-naphthol, and a statement of its asserted marked inferiority to hydro-naphthol as an antiseptic, caused me finally to disbelieve in hydro-naphthol. As reports in the journals of its use in medicine and surgery were not infrequent, others evidently being misled as I had been as to its identity, and as it was apparently obtaining a certain definite chemical position, I sought to have a careful examination made of it in a manner that would forever settle the question. Mr. Charles P. Beckwith, of Detroit, Michigan, very kindly undertook the matter for me, and has rendered the following most complete report, which will have the effect desired.

Report on the Composition of Hydro-naphthol.

This preparation is now put on the market in the form of a light-brown powder. The first sample obtained, that from a local drug-store, differed somewhat in appearance from the present preparation, being crystalline, and looking not unlike some samples of β-naphthol. Since then several different samples of hydro-naphthol have been received, directly and indirectly, both through druggists and from the manufacturers. These samples have all presented the uniform appearance of a light-brown powder. The first experiments seemed to indicate that hydro-naphthol is simply an impure β-naphthol. It could be readily sublimed, and the crystals so obtained were white, and gave all the reactions for β-naphthol. Several methods of purification were carried out, yielding a product in no way distinguishable from β-naphthol. When applied to the impure substance, reactions were obtained for β-naphthol, modified slightly, however, by impurities present.

Inquiry was made of the manufacturers, requesting such information as they could furnish as to identity of hydro-naphthol, its reactions, etc. In reply, it was stated that

> "If a known sample of 'hydro-naphthol' is tested alongside of a sample of ordinary β-naphthol, the perchloride of iron test produces a deep yellow-brown color with the former, but a bright-green color with the latter. It is a difficult matter to differentiate between the two, the ordinary reagents converting hydro-naphthol into β-naphthol. But if a solution of each is compared with a standard solution of permanganate of potash, it will be found that the oxidizing power of hydro-naphthol stands as 3 to 2 in comparison with β-naphthol."

These tests are, I believe, worthless. The only difference noticeable between β-naphthol and hydro-naphthol, when treated with solution of ferric chlorid, is this: the green color characteristic of β-naphthol is evident in both cases, modified, however, in the case of hydro-naphthol, by the natural brown color of the alcoholic solution of this compound, due to its impurities. The pure green color was obtained with the crystals purified by sublimation or otherwise. The statement is made in the foregoing letter that ordinary reagents decompose hydro naphthol, forming β-naphthol. In the pamphlet on hydro-naphthol by the manufacturers, it is claimed also that heat sufficient to sublime it causes the same result. I may say here that later a method of purification was found, to which I think the manufacturers cannot object. The pure compound so produced yielded this and every other test for β-naphthol perfectly. The greater reducing power of hydro-naphthol for potassium permanganate is likewise due to the tarry impurities present. This might have been predicted. With the purified preparation no such difference is noticeable.

Some tests were requested of the chemist of the manufacturers capable of differentiating hydro-

[1] A specimen I have had for several years is quite dissimilar in physical appearance from some obtained a few months ago.

[2] See my paper: "Treatment of Cholera by the Naphthols," American Journal of the Medical Sciences, April, 1893.

naphthol from beta-naphthol. In reply, it was stated that

"The crystals obtained on cooling hot saturated naphtha or gasolin solutions of hydro-naphthol and β-naphthol, respectively, have distinct characteristic forms, usually obvious under a low power. The β-naphthol crystals usually form simple rhombic plates, while hydro-naphthol forms compound lance-shaped crystals.

On investigating this test, I may say that I have not found it at all reliable, the crystals deposited from naphtha seeming to depend upon conditions of temperature, concentration, rate of cooling, etc. I had no difficulty in obtaining the lance-shaped forms from β-naphthol as well as from hydro-naphthol. This form is but a modification of combined rhombic plates.

The pamphlet of the manufacturers on hydro-naphthol was also sent me, in which the following comparative tests are given:

Hydro-naphthol.	*Beta-naphthol.*
Addition of one drop tincture of chlorid of iron (U.S.P. 1880) to its solution containing 2-3 grains of it in one fluid-dram produces a deep yellow-brown color, from which, after some time, dark-brown flocculi separate.	In solution of alcohol of the same strength becomes, with one drop of the same tincture of chlorid of iron, of a bright-green color, changing after some time into dull yellow, without separating anything.
Melting-point: 117°C. Soluble in cold dilute caustic soda, with a brown coloration. Solubility in water at 60° F., 1:1150. Dissolves in 10 parts alcohol, with dark-brown color.	*Melting-point:* 123°C. Insoluble in diluted cold caustic soda. Solubility in water at 60° F., 1:800. Dissolves in 10 parts alcohol; nearly colorless.
Physiological action on the human organism harmless and odorless.	*Physiological action* on the human organism strongly poisonous, producing albuminuria, even when the smallest doses are given by external application.

Of these, the iron test has already been shown to be worthless. Melting-points are always lowered by slight impurities. The product purified by the method described later melted at 122° C. I found Merck's "medicinal" β-naphthol to be soluble in 1 per cent. solution caustic soda—cold; also in ¼ per cent. solution. The very slight difference in solubility in water is readily accounted for by the presence of impurities. As to the comparative physiologic effects of hydro-naphthol and β-naphthol, I would refer to Bouchard's experiments with β-naphthol quoted in *Merck's Bulletin*, December, 1890, p. 148.[1]

It occurred to me that could hydro-naphthol be purified by some method to which the manufacturers could not reasonably object, a combustion might be made, and the carbon and hydrogen determined. This would settle the question. Experiments were tried in various ways. The substance was recrystallized repeatedly from naphtha, benzin, alcohol, ether, hot water, etc., without much success. Recrystallized four or five times from hot water, it still retained considerable color. After many experiments it was found that crystals almost perfectly white, and pure enough for analysis, might be obtained in small quantity by dissolving a large amount of hydro-naphthol in hot water, filtering very quickly, and again re-filtering quickly, so as to obtain the small amount of crystals first thrown out from the still quite hot solution. Occasionally a repetition of the process was required, but generally the crystals were very nearly white. Charcoal readily effects the decolorization—see their pamphlet, which was not, however, received until after the purification had been effected—but this was not used, lest the claim be made that it would decompose the hydro-naphthol. Inasmuch as the manufacturers recommend solution in hot water in using their product as an antiseptic, I do not think they can justly object to this method of purification. These crystals responded perfectly to every test for β-naphthol. A combustion was made of these crystals, every possible precaution being used to obtain correct results. They are as follows:

Calculated for $C_{10}H_8O$ [1]	Found.
Carbon, 83.33 per cent.	83.34 per cent.
Hydrogen, 5.55 "	5.58 "
Oxygen, 11.11 "	11.08 (by difference)

These figures seem to be quite conclusive. It does not follow that the manufacturers intend to mislead by their statements. In fact, I think it very likely that they put the β-naphthol through some such course of treatment as they claimed. I believe them to be mistaken, however, as to the effect of such treatment.

Finally, as a result of most thorough and painstaking investigation, I pass the opinion that "hydro-naphthol" is simply β-naphthol, together with certain tarry impurities, very possibly its own decomposition products.

Respectfully submitted,

CHARLES B. BECKWITH.

FEBRUARY 23, 1893.

[1] For a full account of Professor Bouchard's experiments, see *Pharmaceutische Rundschau*, February, 1888, pp. 40, 41. Professor Bouchard conclusively demonstrates that β-naphthol cannot be called poisonous in any dose that can be administered medicinally; that the toxic quantity for a person 65 kg. (143 lbs av.) is 250 grams (8¾ oz. av.). This is most interesting in view of the fact that the manufacturers assert in their pamphlet that a "substitution [of β-naphthol] for hydro-naphthol will certainly result in failure and probably prove fatal to the patient." Comparative physiologic experiments were also carried out at the instance of Merck with ordinary hydro-naphthol, sublimed hydro-naphthol, and sublimed beta-naphthol, by Prof. Dr. Boström, director of the Pathological Institute at Giessen. These also conclusively showed that beta-naphthol was without toxic properties, but rather acted as a "good antiseptic, for all wounds healed rapidly without suppuration." See *Pharm. Rundsch.*, April, 1887, "Ueber das sogenannte Hydro-naphthol," by E. Merck.—D. D. STEWART.

[1] $C_{10}H_8O$ or $C_{10}H_7OH$ equals the formula of beta-naphthol, or its isomer, alpha-naphthol.—D. D. S.

Comment on the foregoing comprehensive report is unnecessary. It establishes beyond shadow of doubt the identity of the proprietary product, called "hydro-naphthol," with ordinary impure beta-naphthol. When I sought help in the matter, though I was aware that a chemist's investigations were asserted to have been made of hydro-naphthol by others, I was ignorant as to the thoroughness of these or to the conclusions reached. I was unable to find references to these until after I had received Mr. Beckwith's report. I have since found that the subject has been especially investigated by Professor Jacobson, of Berlin; Merck, of Darmstadt, and Gehe, and also by Hoffman, Endemann, and Mr. Genois, of this country, all of whom came to a similar conclusion as Mr. Beckwith, but none, so far as I know, has investigated the matter so thoroughly as he. Merck's investigation[1] is especially worthy of mention. It is as thorough as Mr. Beckwith's, with the exception that no combustion of hydro-naphthol was attempted.

CLINICAL MEMORANDA.

THERAPEUTIC NOTES.

By SOLOMON SOLIS-COHEN, M.D.,
PROFESSOR OF CLINICAL MEDICINE AND APPLIED THERAPEUTICS IN THE PHILADELPHIA POLYCLINIC; ONE OF THE PHYSICIANS TO THE PHILADELPHIA HOSPITAL, ETC.

I.

Benzo-naphthol. One of the best of recent drugs is that known as benzo-naphthol, an almost tasteless, slightly pungent powder, which, in the intestines, is split up into benzoic acid and naphthol. It is a most efficient antiseptic and astringent in enteric fever, as well as in less serious conditions associated with intestinal sepsis, and is especially useful in various forms of indigestion (acute and chronic catarrh of the alimentary tract) associated with flatulence and diarrhea. It would doubtless prove useful in some cases of cholera and cholerine. The dose is from 5 to 15 grains (0.3 to 1 gram), and so much as 75 grains (5 grams), it is said, may safely be given in twenty-four hours. It is apparently devoid of toxic effect, and possesses, besides its other powers, those of a mild diuretic.

Sparteine Sulphate. This drug is one of those concerning which different observers give opposite opinions. The disappointment not rarely experienced may, in some cases at least, be ascribed to insufficient dosage. In our experience sparteine usually acts best when given, at first, at intervals of about two hours, in doses of from a quarter to half a grain *per os*, or one-eighth of a grain hypodermatically. After from twelve to thirty-six hours of such dosage the intervals may be lengthened, and after three or four days one or two half-grain doses daily will often be sufficient. In a few instances, one-grain or two-grain doses, three or even four times a day, may act better than the smaller and more frequent doses, but we should always try the latter first.

Sparteine is, however, usually more efficient as a cardiac tonic when combined with caffeine, and its diuretic action may be powerfully aided by small doses (about $\frac{1}{10}$ of a grain) of pilocarpine; as also by draughts of hot lemonade containing spirit of nitrous ether.

Guaiacol Salts in Tuberculosis. Of drugs advocated for the treatment of pulmonary and other forms of tuberculosis, creasote is one of the best. Its only equal, indeed, is iodoform. Some patients, however, possess or acquire an intolerance (subjective or objective) to creasote, whatever method of administration be tried.

In such cases, guaiacol carbonate or guaiacol benzoate may be advantageously substituted. These are unirritating and almost tasteless. The dose of either salt is from 3 or 5 grains (0.2 to 0.35 gram) up to the point of tolerance. An effective dose is 5 grains, four times a day, best given in capsule or cachet after food. As guaiacol benzoate is split up in the small intestine into benzoic acid and guaiacol, it seems to have an especial advantage in the treatment of intestinal lesions, and is certainly quite useful in the management of diarrhea in tuberculous subjects.

Idiosyncrasy to Strychnine and to Picrotoxin. In a case of vasomotor ataxia, in a married woman of dark hair, eyes, and complexion, between forty and fifty years of age, strychnine was given in small doses (gr. $\frac{1}{60}$ t. i. d.), the patient not being aware of the fact. In a few days she returned, stating that she had been given strychnine, and that she knew it by its effect in producing, after four doses, the still visible swelling of the face and eyelids—the same symptoms having followed its administration some years previously. For purposes of observation, tincture of nux vomica was administered with the same result. Some weeks later, picrotoxin in doses of gr. $\frac{1}{60}$ t. i. d., was likewise followed by edema of the face and eyelids, after two days' dosage. No organic disease had been detected in the case. The urine did not contain albumin.

Idiosyncrasy to Cinchona. A young, fair, red-haired, blue-eyed, married woman, with influenza, was given 15 grains of cinchonidine salicylate in three doses of five grains each. On the following day, intolerable itching of the skin was followed in the course of an hour by the appearance of an eruption, partly erythematous, partly urticarious, occupying the face, arms, and trunk, in areas of apparently irregular distribution. The patient stated that the administration of quinine, in so small a dose as 5 grains, was always followed by such an eruption. The exanthem persisted for twenty-four hours. Sodium salicylate, given for control-observation, did not have the same effect.

Idiosyncrasy to Coniine Hydrobromate. A woman, sixty years old, for ten years affected with paralysis agitans, was given coniine hydrobromate as a substitute palliative for the hyoscyamine sulphate she had, for some

[1] "Ueber das sogenannte Hydro-naphthol," *Pharm. Rundsch.*, April, 1887, and "Noch Einmal Hydro-naphthol," Ibid., July, 1887.

time and with much benefit been taking in doses of $\frac{1}{200}$ grain t. i. d., but of which it had become necessary to reduce the dose below the effective point on account of ocular symptoms. It was intended to give $\frac{1}{100}$ grain coniine hydrobromate, and increase until the proper dosage should be ascertained. Owing to a misunderstanding as to the initial dose, and as to the cessation of the hyoscyamine, only $\frac{1}{200}$ grain of coniine hydrobromate was given, but the same quantity ($\frac{1}{400}$ grain) of hyoscyamine was likewise given. Ten minutes later the tremor had entirely ceased, and in twenty minutes the patient complained of inability to move the lower extremities, but without loss of sensation, and with gain of power in the upper extremities through diminution of rigidity. In about four hours the former condition of affairs—trembling, rigidity, and power of locomotion—had returned. The patient could not be induced to take coniine again, and, indeed, refused all medicine for fear of its surreptitious administration, so that a promise not to make any further experiment with it had to be given. The drug will doubtless be found useful in controlling symptoms in some cases of paralysis agitans, as it is in some cases of chorea.

ABSCESS OF THE LIVER, COMPLICATING CIRRHOSIS; MULTIPLE ASPIRATION; RECOVERY.

BY W G. HOPE, M.D.,
OF ALBUQUERQUE, NEW MEXICO.

J. M., a German, by occupation a butcher, thirty-seven years old, a steady and rather immoderate consumer of beer and whiskey, applied for treatment, November 11th, after having been vomiting (no blood) more or less constantly for three days. The bowels were constipated; the tongue dry and covered with a heavy, yellowish coat; the temperature 100°; the pulse 127; the respiration 28. Several large blotches of petechiæ were present upon the chest and back. The area of hepatic percussion-dulness was considerably increased. The abdomen was full, tense, and hard, notwithstanding the protracted vomiting. There was no soreness or even tenderness over the liver, but there was some tenderness over the bowels and stomach. For the preceding four months the patient had suffered from attacks of constipation and diarrhea alternately, with occasional chilly sensations, followed by slight perspiration. He had been drinking more than usual on November 8th. I made a diagnosis of cirrhosis of liver, with alcoholic gastritis. By November 14th the vomiting was checked; the bowels had been moved vigorously; and the patient was taking and retaining a fair amount of liquid nourishment. The soreness had disappeared from the epigastric region; the general well-being of the patient was greatly improved; but about once in two days a slight, scarcely appreciable chill occurred, followed by slight fever and sweating. The pulse kept above 100, and the appetite remained poor. The patient was nervous and slept badly. There was no pain, and but little tenderness on percussion over the umbilicus.

On November 16th, twenty grains of quinine sulphate were given in the course of twenty-four hours, followed closely and regularly by smaller doses for eight days; at the same time the bowels were kept active. Although the stomach retained all medicine, and the bowels moved profusely (ash-colored stools), the slight chills and sweats continued, uninfluenced in the least degree by the quinine. The bowels were constipated, except when laxatives were given. The patient was getting slowly weaker, more nervous, more sleepless. Tonics failed to stimulate the appetite. When the quinine failed to break the intermittent fever, I thought, by a process of exclusion rather than from the symptoms, that we had to do with an abscess of the liver; but as there was no "pointing"; as the temperature never rose above 101°; as the rudest manipulation over the liver could elicit no pain or even tenderness; as the patient insisted on walking about the streets, and sometimes ate fairly well for three or four days at a time, I decided to keep him as quiet as possible, gave him iodin internally and externally, kept his bowels open, and awaited more marked symptoms. On about December 10th, Dr. Easterday, of this city, was called in consultation. He agreed that we had an hepatic abscess; that the abscess was small and deep-seated; that its contents were possibly being absorbed; and advised delay of operation until more pronounced symptoms appeared. By December 17th, the chills and sweats were more marked; the temperature was 104°; the pulse 130; the patient very restless; the bowels were still constipated. On December 19th, after consultation with, and with the assistance of, Drs. Easterday and Pearce, of this city, I aspirated (without an anesthetic).

A large five-inch needle was inserted two and one-half inches below and two inches to the right of the right nipple. Not till the needle had entered a distance of four inches did pus begin to flow; then about four ounces of characteristic "brick-colored" pus was removed.

For fifteen days after the operation the temperature was normal, though slight sweating occurred about every thirty hours; the appetite was good; the man slept well. Then the slight chills began to return; the sweats gradually became more profuse; the appetite was lost. By January 12th, the patient had declined in weight during his whole sickness from 165 to 112 pounds. During all this time there was absolutely no tenderness over the region of the liver; for only a few days was there diarrhea, but never dysentery. On January 13th, with the assistance of Drs. Pearce and Easterday, ether was administered and a bistoury was inserted at the most prominent part of the hepatic enlargement, in the axillary line, three inches toward the seat of the abscess (as ascertained at the former aspiration). No pus came. Then a large trocar was inserted along the track of the wound made by the bistoury, about three inches into the hepatic tissue. No pus flowed. Then a long aspirating-needle was inserted through the canula of the trocar still *in situ*. The needle was thus inserted a distance of five inches, when about two or three ounces of pus were evacuated.

The canula of the trocar and the needle were slowly withdrawn together, the aspirating-pump being operated at the same time; but no pus was obtained from any other part than the cavity already mentioned. The wound healed by first intention and gave no trouble, except for slight soreness on deep respiration, and that, only for three days. Recovery was rapid and uneventful. The cirrhosis manifested itself by considerable anasarca of the lower extremities, for three weeks after

the patient began to walk. The patient was discharged January 26th. The temperature never rose above the normal, nor was there chill or sweat after the second aspiration, although the pulse kept above 100 for a month. The man has now (March 2d) been doing his ordinary work as a butcher for a month; he weighs 160 pounds; his appetite is good; he says that he never felt better in his life.

The points of especial interest are:

1. The absolute absence of pain over the hepatic region, throughout the whole course of the case.

2. The presence of tenderness over the umbilicus—a symptom referred to by Da Costa.

3. Constipation, continuous and stubborn, until four days before the second aspiration.

"Practically, an intermittent fever which resists quinine is not malarial." (Osler, *Practice of Medicine*, 1892.)

INSANITY IN TWINS.

BY FRANK PARSONS NORBURY, M.D.,
ASSISTANT PHYSICIAN, ILLINOIS CENTRAL HOSPITAL FOR THE INSANE, JACKSONVILLE, ILL.

A. M. and I. M., twin brothers, aged thirty-two years, natives of Prussia, not married, were admitted to the Illinois Central Hospital for the Insane, September 5, 188—. The cause of the insanity, in each case, according to the verdict of the jury, was "self-abuse and loss of money." Heredity was the real underlying cause, as their mother was insane. Masturbation seemed to us to have no etiologic importance in either case. The cases presented symptoms almost identical. A. M. had been insane two weeks before admission to the hospital, his attack beginning suddenly with maniacal excitement; he became very noisy and violent at times. The delusions, manifested then and since, were of a religious character, more or less systematized. He believed his brother was the Messiah, and had descended from heaven; that the Messiah (his brother) had ordered that he be worshipped in sackcloth and ashes, and that, as a religious rite, A. M. should drink salt-water. When admitted to the hospital he was agitated, sleepless, emaciated, and would not take nourishment readily. After the agitation had subsided, he ceased to be violent, but the delusions were as persistent as ever, and became more systematized. He talked less, and after a time he settled into a state of indifference and carelessness, which, after two years, is practically unchanged. He has twice escaped from the hospital, both times going to his home, where he caused consternation by his insane actions. At present he is in good physical health, his mental symptoms being those of degenerative paranoia.

I. M. did not become disturbed until a week after his brother's insanity had developed, when suddenly he, too, became noisy and went about proclaiming that he *was* the Messiah, and the day of judgment was at hand. His agitation rapidly developed into violent maniacal excitement, necessitating restraint. When admitted to the hospital he was considerably exhausted, from prolonged excitement, loss of sleep, etc. After a few days he became again very much agitated, and continued so, at intervals, for a period of three months. His agitation was more violent than that of his brother, but was similar in character. He ultimately became calm—in fact, for a time, was depressed, but later a more regular mental state was established; he became brighter than his brother, but never displayed much sane intelligence. His delusions became systematized and marked his case as one of degenerative paranoia. His physical health improved and he was finally removed, by the county authorities, from the hospital to the County Institution, from which he soon after eloped and then emigrated to a neighboring State.

The brothers resembled each other closely: I. M. was heavier and stronger than A. M., but their mental caliber, habits, and customs, as well as occupations, were similar. I. M. was a tinker, A. M. a peddler; they travelled together, lived a hermit like existence together, and were very devoted to each other. They were Jews, and in their religious observances were always together. These cases support what Ball[1] has said regarding insanity in twins, viz., "that they show the closest physical and moral resemblance; features, intellectual and moral disposition coincide." Their mental aberration is developed simultaneously and the attacks are similar in character. In these cases both are pronounced paranoiacs. Further, the dominating influence of heredity is shown in these cases in the highest manifestations of its force. For these twins are brothers with a closer tie than that of other children in the same family, "because they were born at the same time, conceived under identical circumstances, they experienced the same influences during the whole period of gestation, and as in some, if not in all, cases there has resulted a striking resemblance of cerebral organization and of physical health." Such can be the only possible origin of these pathologic symptoms which, breaking out at the same moment, follow an absolutely identical course, characterized by the same phases and same observations.

NEW DEVICES.

AN IMPROVED VAPOR-APPARATUS.

BY WILLIAM SCHEPPEGRELL, A.M., M.D.,
ASSISTANT SURGEON TO THE EYE, EAR, NOSE, AND THROAT HOSPITAL OF NEW ORLEANS.

IN the treatment of diseases of the Eustachian tube and middle ear it is frequently expedient to resort to the use of vapors of various kinds. A convenient apparatus for this purpose is shown in Fig. 1, which was made for me by Messrs. I. L. Lyons & Co., of this city.

The reservoir consists of a heavy German glass pint bottle having two necks, somewhat similar to a Wolff's bottle. Two glass tubes, bent at right angles, are passed through rubber stoppers, as shown in the cut, the tubes extending for a distance of half an inch into the necks of the bottle. A piece of rubber tubing is attached to one of the bent tubes, the free end of the rubber tubing being attached to a hard-rubber point, which fits into the end of a Eustachian catheter. A double bulb is attached to the other glass tube by means of a piece of rubber tubing, two feet in length.

For use, the reservoir is partly filled with tincture of iodin, compound tincture of benzoin, or other medica-

[1] B. Ball: Insanity in Twins. Tuke's Dictionary of Psychological Medicine.

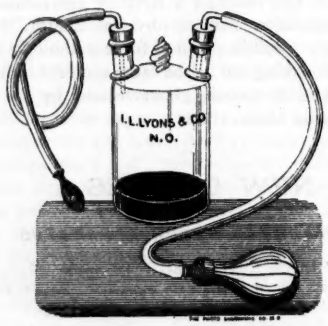
ment. When the bulb is used, the air passes through the reservoir, carrying the vapor through the hard rubber point into the Eustachian catheter.

FIG. 1.

Fig. 2 represents the vapor apparatus so modified that it can be used by the patient at home. Instead of the double bulb, there is attached a Politzer air-bag; and, instead of the point to fit into the Eustachian catheter, there is an ordinary hard-rubber nose-piece.

When using the apparatus the patient should fit the nose-piece firmly into one nostril, and close the other nostril. He should then say "hick," and keep the tongue

FIG. 2.



firmly pressed against the palate, while the air-bag is compressed. If properly done, the patient will hear the characteristic sound in the ear.

Instead of saying "hick," the patient may take a mouthful of water, which is swallowed just as the air-bag is compressed.

In children, who cannot be taught either of the above methods, the inflation may be carried on with equal success while the child cries.

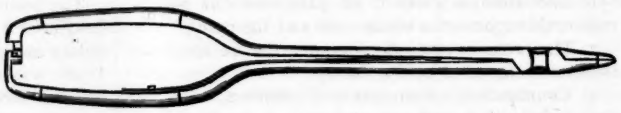
CITIZENS' BANK BUILDING.

AN IMPROVED ANTISEPTIC WIRE-SUTURE TWISTER.

BY EDWIN K. BALLARD, M.D.,
ASSISTANT SURGEON TO HOSPITAL FOR WOMEN OF MARYLAND, BALTIMORE.

THE accompanying cut shows a wire-suture twister which has advantages over the one now used for gynecologic and other work when such an instrument is needed.

In the old-style twister closure of the jaws is effected indirectly by pushing forward with the thumb a sliding rod, the lower end of which clasps a slot upon the under jaw of the instrument, which affords leverage to pull the jaws together, as well as a support to hold them closed upon the end of the wire. In using this instrument it sometimes happens that, unless considerable force is applied, the catch fails to grasp the slot; and at times, after being held, the suture



becomes jammed in the grasp, due to friction of the slide.

To overcome these defects, as well as to furnish an instrument capable of thorough and easy cleaning, I have devised the one represented. It is seven and a half inches long, and consists of two shanks and a spring, all detachable from each other. Its beak is shaped as in the usual twister, though smaller, and with a spherical depression on the inner surface of each jaw. The joint is formed by a straight pin on one shank fitting into a round hole in the other, with projecting shoulders on the female blade, under which the male blade is securely caught. The blades are unlocked by turning at right angles and dislodging the axle-pin. An ordinary catch-forceps lock fastens the separating spring to one handle.

An ingenious feature is the fastening catch, which our instrument-maker uses on needle-holders of a certain pattern, and from which this was suggested. After passing over the last notch the catch is unhooked at once by slipping into an open space in the ratchet, instead of requiring a lateral push to free it, as is the case with most ratchet-catch handles. This device enables the twister to be closed and opened by a continuation of the same movement—simple pressure of the hand; at the same time it does not allow the handles to separate in the act of rotation, as they need only to be very lightly grasped when used.

MEDICAL PROGRESS.

Cesarean Hysterectomy in a Malacosteon.—SPOHN has reported (*Daniel's Med. Journ.*, viii, 8, p. 300) the case of a short, stout woman, forty-two years old, who had borne nine children. The last two labors, respectively four years and six years previously, had been difficult and instrumental, and the woman was informed that she could not again give birth to a child. The woman was a malacosteon. The peculiar position that she was compelled to assume in her work as a "tortillera" (kneeling with the body bent forward) had caused an anterior curvature of the vertebral column in the lower dorsal and lumbar regions, the most prominent point of the curve being two and a half inches from and a little above the pubic arch. The woman, however, again conceived and went into labor at term. When seen, after three days, the membranes had ruptured, and it was decided to open the abdomen and remove the uterus and its appendages. An incision was made into the abdomen sufficiently large to permit slight protrusion of

the fundus of the uterus, which was seized with strong vulsella forceps, and held, while an incision was made directly into it. Two fingers of each hand were then introduced into the uterus, and the opening enlarged by tearing. Before the uterus was delivered the child had been expelled by contractions. A rubber tube that had been thrown around the uterus was tightened as the organ passed through the abdominal opening, and a long piece of aseptic gauze was wound around the uterus to prevent the escape of any of its contents into the abdominal cavity. Though the uterine incision had passed through the center of the placenta there was but little hemorrhage. The child was well developed and lived. The pedicle was transfixed above the elastic ligature by four long knitting-needles; the uterus was removed; and the free surface was seared with the actual cautery. The abdominal cavity was irrigated with sterilized water; no drainage-tube was employed; the abdominal incision was closed with silk, the sutures near the pedicle passing through it just below the constricting tube of rubber. The pedicle came away on the tenth day, leaving an opening between the vagina and the abdominal incision which gradually closed by granulation. The woman was quite well in the course of thirty days. The child was nourished artificially. Mother and child were well a year after the operation.

Pulmonary Gangrene from the Presence of a Tooth in a Bronchus.—Munro (*Glasgow Medical Journal*, xxxix, 2, p. 112) has reported the case of a boy, ten years old, who was operated on for necrosis of the femur resulting from a fall. After the operation, although the wound progressed favorably, the temperature continued high, with marked fluctuations; the breathing became accelerated and shallow; at first dry and then moist râles were heard; the percussion-note on the left side of the chest became dull; emaciation set in; and the breath became strikingly offensive. Fifteen days after the operation the child died. At the post-mortem examination the left lung was found riddled with small gangrenous cavities containing foul-smelling fluid of brownish-green color. In the left bronchus, at a point where the tube entered the pulmonary structure, a temporary molar tooth belonging to the upper jaw, and containing a carious cavity, was found. The mucous membrane of the bronchus was congested from a short distance from the bifurcation of the trachea downward. The spleen contained several caseous-looking masses, probably of tuberculous origin, and small portions of which were calcified. In explanation of the accident it is noted that in cleansing the mouth in the course of the operation two loose teeth were detached and removed. It is thought that a third escaped notice and was inspired.

Intrinsic Nerves of the Kidney.—Berkeley (*Bulletin of the Johns Hopkins Hospital*, vol. iv, No. 28, p. 1), as the result of a histologic study, comes to the conclusion that the renal nerves enter the kidney with the vessels at the hilum, and that, with their multifarious ramifications and ganglionic enlargements, they form a not inconsiderable portion of the entire substance of the organ. From the vascular nerves, which may be called primary nerves, pass secondary divisions that are distributed throughout the cortical and medullary-cortical regions in the form of a vast open network. The glomeruli are surrounded by a wide-meshed plexus of fibers, having terminal end-knobs approximated closely to the capsule of Bowman. Fibers pass off singly and separately from the vascular nerves, and are distributed to the convoluted tubes, not only as end-terminations in the form of the well-known globular ending, but also as fine, delicate threads that penetrate the membrana propria of the tube, and presumably enter the cement-substance between the epithelial cells; the function of these divisions to the tubuli contorti is probably one concerning the urinary secretion. Ganglionic enlargements occur widely, but, strictly speaking, no nerve-cells, provided with nucleus, body, and protoplasmic arms, are to be found. All of the renal nerves belong to the sympathetic system.

Premature Labor, with Symphysiotomy.—Budin (*Bull. et Mém. de la Soc. Obstét. et Gynécol. de Paris*, No. 3, 1893, p. 21) has reported the case of a rachitic woman, thirty years old, with a deformed pelvis, who was pregnant for the third time. The first pregnancy had terminated at maturity; the fetus had been dead for a week and was macerated. The second pregnancy was terminated prematurely; a living child was delivered, but it died in the first week. The distance between the promontory of the sacrum and the inferior surface of the pubic junction was 3.65 inches. In view of the previous history, it was decided to induce labor before the normal termination of the third pregnancy and to perform symphysiotomy. The delivery was a difficult one; it became necessary to apply the forceps to the after-coming head; nevertheless, a living child was born. The woman convalesced satisfactorily. When she walked, on the twenty-first day, there was no greater mobility at the pubic joint than is common in multiparæ at a corresponding period. The child, however, did not thrive. As the mother had no milk, the infant received sterilized milk. Syphilis was suspected and mercurial inunctions were employed, but despite all care the child died on the thirteenth day. On examination after death no lesion was found; so that the diagnosis of syphilis seemed to be confirmed.

The Early Eye-symptoms of Posterior Spinal Sclerosis.—From a consideration of the possibility of the early diagnosis of posterior spinal sclerosis from the eye-symptoms, Hansell (*Journal of the American Medical Association*, 1893, xx, 7, p. 167) concludes that transient external ocular paralysis—for example, ptosis or esotropia—in the absence of a recognized cause, may be an indication of incipient posterior sclerosis. The existence of spinal myosis, unilateral or bilateral, the pupillary response to light being wanting, but the reaction with convergence being present, would warrant a strong suspicion of incipient sclerosis. So-called "idiopathic" atrophy of the optic nerve, non-inflammatory and of unequal degree, often precedes by months or years the appearance of the spinal symptoms of posterior sclerosis. The coexistence in a person between thirty and sixty years of age, with hereditary neurotic tendencies, of paresis of one or more extrinsic ocular muscles, spinal myosis and Argyll-Robertson pupil, and incipient atrophy of the optic nerve, in the majority of cases is followed

by the appearance of distinctive symptoms of posterior spinal sclerosis.

Hernia of the Bladder.—AUE (*Deutsche Zeitschr. f. Chirurgie*, B. xxxv, H. 3, 4, p. 351), from a study of fifty-nine cases of hernia of the bladder of which he could find record, and an additional case under his immediate observation, arrives at the conclusion that the condition, though not frequent, is not as uncommon as is usually stated. Most commonly a portion of the bladder finds its way into the groin; less frequently into the perineum, the sciatic foramen, the crural canal, and the linea alba. The hernia may be simple, or it may be complicated by the presence of bowel; either may have prolapsed before the other. A sac is wanting if the prolapse involves a portion of the bladder uncovered by peritoneum; while hernia of a portion covered by peritoneum may be attended with the formation of a sac. If both bladder and bowel are involved in the hernia, the former is always situated behind the latter, which is usually adherent to the surrounding structures. Hernia of the bladder is not a malformation, but an acquired defect. Its occurrence is usually attended with characteristic symptoms, which are, however, occasionally absent. The only rational treatment is a radical operation; palliative treatment is permissible only in exceptional instances.

THERAPEUTIC NOTES.

The Relative Utility of the Various Preparations of Iron in the Treatment of Anemia and Chlorosis.—SMART (*Lancet*, Nos. 3625, 3626), as the result of a clinical study, found, in the treatment of anemia and chlorosis, that of the various forms of iron employed the best results were obtained with the sulphate in doses of seven grains three times daily; in cases associated with atonic dyspepsia it is of advantage to prescribe from fifteen to twenty-five minims of dilute hydrochloric acid shortly before meals; if there be hyperacidity, ten grains each of sodium bicarbonate and potassium carbonate are to be preferred. Next in efficiency was saccharated iron carbonate in doses of from twenty to thirty grains twice daily. Third came ferrous chlorid in the form of syrup, in doses of a dram (seven and a half grains) three times daily. Iron phosphate was fourth, and ferrous oxid was fifth. Arsenic alone did not appear to exert any appreciable effect upon the regeneration of the red blood-corpuscles and hemoglobin in the cases of symptomatic anemia in which it was employed; combined with iron, especially the sulphate, arsenic was capable of positive results. In pernicious anemia, on the other hand, arsenic exerted a distinctly noticeable effect in promoting recovery alike of red blood-corpuscles and hemoglobin.

The Treatment of Delirium Tremens.—LANCEREAUX (*Bulletin Médical*, No. 15; *Münchener medicinische Wochenschr.*, xl, 9, p. 187) maintains that the first indication in the treatment of a case of delirium tremens is to control the excitement, which is dependent upon the toxic action of the alcohol upon the nervous system and is responsible for the sleeplessness, and sometimes for a fatal issue. The patient is to be isolated and, preferably, placed in a dark room, so as to be removed from all sources of irritation. Of drugs, bromin is uncertain in action, and opium and morphine are efficient only in large doses; chloral hydrate, on the other hand, is certain and prompt in action. From sixty to ninety grains are at once given, together with a little morphine. If sleep do not set in in the course of ten minutes an injection of a sixth or a third of a grain of morphine is given. If necessary the dose of chloral may be repeated after the lapse of three hours. Subsequently the interval may be prolonged. When the acute manifestations have subsided, strychnine or nux vomica is to be administered. Sodium bicarbonate may be required for the gastric condition and hydro-therapeutic measures for the general condition.

The Effect upon Sucklings of Purgatives Administered to the Mother.—GOW (*Practitioner*, vol. l, No. 3, p. 168) has made observations upon forty-two nursing women, suffering with constipation, to determine if the administration of purgatives was attended with any effects upon the children. Four drugs were employed: aloes, senna, cascara sagrada, and magnesium sulphate. It was found that while the administration of magnesium sulphate to the mother was frequently followed by looseness of the bowels of the suckling child, senna, cascara sagrada, and aloes rarely brought about such a result.

Pyoktanin for Ptyalism.—HEIMANN (*La Semaine Médicale*, 1893, No. 14) has reported the case of a woman, fifty-six years old, who for two years had suffered from intense and offensive ptyalism, of unknown origin, associated with swelling and redness of the structures of the buccal cavity. Astringent gargles had proved futile; the internal administration of potassium iodid afforded but temporary amelioration; but the employment of a 1 per cent. solution of blue pyoktanin, by means of a spray, twice daily, for a period of three weeks, was followed by permanent relief.

For the Night-sweats of Pulmonary Tuberculosis.—(*Ewart*).

℞.—Quininæ sulphat.
Zinci sulphat. } . . . āā gr. j.
Ext. hyoscyami
Ext. nucis vomicæ . . . gr. ½.—M.

Ft. pil. no. j. S.—Take at bedtime.

La Semaine Médicale, xiii, 12.

In a Case of Paroxysmal Hemoglobinuria reported by KÖSTER (*La Semaine Méd.*, 1893, No. 14), in which there was a history of syphilitic infection of four years' standing, and which failed to yield to treatment with ergotin and quinine, a cessation of the attacks followed the subcutaneous administration of mercury thymolo-acetate after the sixth injection.

Emulsion of Cod-liver Oil.—

℞.—Ol. morrhuæ . . . . ♏xxx.
Glycerini . . . . ♏x.
Liquor calcis vel
Mucilag. acaciæ . . . fʒj.—M.

The Practitioner.

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OF MEDICAL SCIENCE.

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SATURDAY, APRIL 1, 1893.

CHLORALOSE.

CHLORALOSE is the name given to a substance resulting from the action of anhydrous chloral upon glucose. This drug, which is the latest addition to the already long list of hypnotics, possesses so many interesting and novel properties, as shown by its investigators, HANRIOT and RICHET, that we think it well to bring it before the notice of our readers.

The desirability of conservatism with regard to new drugs is sufficiently evidenced every year by the mushroom-life of hundreds of new and vaunted specifics; nevertheless, the carefully conducted experiments of scientific investigators must always be valuable, and call for careful consideration.

The experiments with chloralose have been conducted in the chemical and physiologic laboratories of the Faculty of Medicine of Paris, and were reported only a few weeks ago before the Société de Biologie.[1] The substance occurs in crystals and is soluble in boiling water, although most of it crystallizes out again on cooling, only five grams per liter being soluble in the cold. In aqueous solution the drug is extremely bitter, but by mixing the powder with milk, or enclosing it in cachets, it can be taken without inconvenience.

[1] Comptes rendus hebdom. de la Soc. de Biol., Paris, 1893, Nos. 2, 4, and 5.

The results from injection into animals are full of interest. A dog which has received a dose of 0.5 gram per kilo of body-weight, after half an hour begins to hesitate in walking, as though his legs were slightly stiffened; later, he lies down, seems sleepy, and the eyelids tend to close. Gradually the decubitus is complete; the animal seems to have an irresistible desire to sleep, and is apparently unable to hold himself up longer. But the sleep is quite different from that of a chloralized dog, for there is no diminution in the reflexes, and a slight touch may cause active movements. If left alone, the dog sleeps calmly for from five to eight hours. The arterial pressure is not lowered, and there is no fall of temperature. On awaking, the dog soon feels perfectly well again, and eats and runs about as usual. A larger dose kills the animal, death resulting from cessation of respiration.

Cats are much more susceptible to the action of the drug than are dogs, and in them one-tenth of the proportionate dose suffices to produce the same symptoms.

A most interesting feature brought out by HANRIOT and RICHET'S investigations is the strange power which chloralose possesses of dissociating sensibility. A dog which has been brought quickly under the influence of the drug by intra-venous injection, loses all sensibility to pain, but retains intact or exaggerated the sensibility to *succussion*. Thus, bloody operations may be performed on skin, bones, and muscles without any apparent attention; but if one shake the table or the floor, the dog will leap violently into the air.

With a smaller dose, say 0.25 gram per kilo, the animal in one or two hours begins to act strangely. Instead of lying down and sleeping, he will wander, head down, about the laboratory, running against chairs and tables, and paying no attention to calls. He seems to have "psychic blindness," and acts like an animal deprived of its gray cortex in the Rolandic regions. The dog is a somnambulist, and walks about oblivious of external excitation.

HANRIOT and RICHET have proved that under the influence of chloralose the gray cortex loses in great part its electric excitability (though not so completely as in an animal poisoned with chloral), while the excitability of the subjacent white matter is retained.

The drug has been used clinically by LANDOUZY, MARIE, MOUTARD-MARTIN, SEGARD, and others, with good results. They find it a faithful hypnotic

in ordinary insomnia, sleep coming on in from a half-hour to an hour after the administration of 0.20 gram of the drug. Should the patient awake too soon, another dose of the same size may be given immediately. The drug is said to leave no unpleasant after-effects, and does not irritate the stomach or intestines. It does not appear to be so effective as morphine in the insomnia of alcoholism. HANRIOT and RICHET regard it as *un poison psychique par excellence*. Like all other drugs of its class, it must be used with care, as individual idiosyncrasies regarding it have already been met with. Particularly with hysterical and neurasthenic women should the early doses be small, perhaps 0.05 or 0.10 gram for insomnia.

From what we have said, chloralose is evidently worthy of further study. The finding of a drug which, it is claimed, affects only the psychic cerebral element, and which is limited in its action to a comparatively small area of the gray cortex, leaving absolutely intact the cardiac, vascular, gastric, and medullary functions, indicates a decided advance in our knowledge of the "poisons of intelligence."

LIFE-INSURANCE AND THE RESPONSIBILITY OF THE MEDICAL EXAMINER.

WHILE the vast increase in the business of life-insurance has resulted in a closer attention to the qualifications of the medical examiner and the securing of a higher grade of physician for that purpose, it must some time longer happen that many secure these positions who have not the requisite qualifications. This is partially owing to the fact that the supply of thoroughly trained physicians does not yet equal the demand in this particular department, and partly to the fact that the appointments are largely made through personal interest of officers of a company in some individual physician—very often the family physician, sometimes a relative. Why should not these positions, in the large cities at least, be dispensed on the basis of an examination of a practical character? The difficulties have greatly increased since the examination of urine has come to be a part of every examination of a candidate for life insurance. Indeed, it seems almost necessary that candidates for this department of civil service should receive special instruction bearing upon their work. Within the last few days a man called upon us who had been rejected by a life-insurance examiner of no small experience because he had sugar in his urine, and this opinion was based on an examination of two samples. Yet the candidate at the time of his visit to us had not a trace of sugar in his urine, and some examination led to the belief that the reaction met by the examiner was due to uric acid, which often misleads.

It is an interesting fact realized by many who have had large experience, that at the present day, while albumin is more frequently declared, by the hasty examiner, to be absent when it is present, glucose, on the other hand, is declared present when it is absent. This is partly due to the uric acid reduction, and because some men still regard *decoloriza-tion* of the cupric solution as reduction and precipitation.

The day will come, too, when what is known as functional or intermittent albuminuria should not be a cause of rejection. In fact, the time is now. But as long as the average medical examiner is what he is, it will, perhaps, be prudent to continue the present practice. Yet, as decisions go to-day, since these throw out all cases of albuminuria, on the one hand many an injustice is done, while on the other many a good risk is lost.

EDITORIAL COMMENTS.

More Years of Study, or More Study in the Year?—In view of the fact of the sharp and continuous lessening of the percentage of college-bred men entering upon medical studies, the cultured editor of the *American Lancet* suggests that the terms of undergraduate medical study be continued almost or quite throughout the entire year. Thus the alumnus would come to practise at about twenty-five years of age. The lengthened term of study in literary and scientific institutions must certainly become an established fact. It is felt that the long vacations are, in great part, useless gaps of leisure, and that they do not harmonize with the press and rush of the world that is round about, or that that is to come. As to medical study, the five or six months semester, and the six or seven months of vacation are already nearly the wonder of the past. To lengthen the term to nine, ten, or even to eleven months, would not be without good consequences. It would, perhaps, stop vacation-loafing, weed out the unriper students, bring to medical study those better fitted, financially and educationally, increase the number of professional teachers, limit the power of the commercial professor as well as that of his college, and thus centralize and dignify the science and the art of medical teaching.

The Death under Ether of Col. Shepard, of New York, on March 24th is, according to the statements of Drs. McBurney and McLane, a puzzling fact. These gentlemen are beyond question most skilful and excellent

surgeons, and seem to have taken every precaution demanded by science. "Between February 24th and March 24th, several examinations of the urine were made, but no evidence of any organic disease of the kidneys was found. His heart and lungs proved to be healthy," etc. Respiratory failure began before anesthesia was complete and before the intended operation (for stone in the bladder) had been commenced. The alarming symptoms increasing, tracheotomy was performed, with the thought that some vomited material might be lodged in the windpipe. Under the administration of oxygen, artificial respiration, and the usual means of relief, the patient revived somewhat. Despite all efforts death occurred at 4.10 o'clock P.M., the administration of ether having begun at 12.45 P.M. Drs. McLane and McBurney state that in their opinion "death was due to sudden edema of the lungs, following the administration of ether, but primarily due to some cause unknown to us."

Stating the Cause of Death.—Mr. Lawson Tait, in a letter to the husband of a deceased wife, stated that the cause of the woman's death was the injury done by the electric needles applied by another practitioner. Mr. Tait, as is well known, is squarely opposed to the treatment of myomata by electrolysis. The practitioner, Dr. Denholm, brought Mr. Tait to legal trial, but the Medical Defence Union defended Mr. Tait so ably that during the trial a compromise was proposed by the plaintiff, and was accepted, whereby each side paid its own costs. An indirect consequence of the trial and subsequent discussion will probably be a division of the Medical Defence Union into two branches, one of the metropolis and one provincial. Much graceless jealousy and professional ill-will came to light, it being very evident that our English brethren are decidedly human. But that they have a Defence Union at all is an illustration of an *esprit de corps* superior to our own.

The Low English Death rate.—About 1873 began throughout England a thorough-going zeal in sanitary science. From this date to 1889 the death-rate was reduced from 21.2 to 17.9 per 1000 of the population. This means that in England and Wales, in 1889, there were about 400,000 persons living that would not have been living if the death-rate of 1873 had been allowed to persist. What an expressive argument is this as to the value of preventive medicine! But in London, with all its crowding, filth, and poverty, the figures are more startling. The death-rate has there fallen in this period from 22.5 to 17.4. What a reproach to us that in our smaller American cities, with exceptional advantages in wealth, drainage, water-supply, etc., but with utter disregard of the a, b, c of sanitary science, we keep up a death-rate of from 22 to 25 per thousand. How little do we value life, the most valuable possession in the world!

The Berlin Sewage-Farms.—It is an interesting fact that in the five years' history of the Berlin Sewage Farms carefully kept statistics show that the administration of these farms has no deleterious effects upon the health. In no case was it possible to trace any case of death to the sewage-farming. The death-rate has, indeed, been exceptionally low, in 1889 being only 4.81 per thousand. Only one death was due to typhoid fever during the entire period. The animals kept on the farms have also been remarkably healthy. There is no unpleasant odor on or about the farms. So pure is the effluent from the farms that it may be permitted to flow into any stream. In fact, experiments have fully proved that this effluent is so pure that fish-breeding is perfectly successful in the water.

Bovine Scarlatina?—Within a few days during last August the health-officers of Glasgow traced some sixty or seventy cases of scarlet-fever to the infected milk of one dairy. The day before the first case was reported, it was learned, a member of the dairyman's family was taken ill with the disease. Further inquiry showed a peculiar eruption on the teats of the cows. Three or four reddish-brown crusts with black centers were found present on each teat of all the cows of the herd. Another herd two miles distant, was similarly affected two weeks later. The possible parallelism with vaccinia and smallpox is interesting and suggestive.

Cure-alls in the Daily Papers.—A correspondent is justly indignant that a paper of the character and reputation of *The New York Times* should practically give the lie to the virtue and morality of its editorial pages by publishing column advertisements of the infallible cures for every imaginable disease by the use of a nostrum designated Humphrey's specifics. Our correspondent asks what can be done about it. Frankly, nothing, so long as almost equally quackish "ads" are appearing every week and month in (so-called) medical journals.

"The G. T. R. Doctor."—With its customary and altogether praiseworthy clearness and bravery, *The American Lancet* shows up the pernicious influence and emptiness of result of the "Get-there-regardless doctors," warning the younger members of the profession against the shortness and valuelessness of their "success." Every community has an example or two of these scheming, self-seeking, dashy fellows, who purchase power and fame "at prices enormously above their true worth," paying therefor the respect of self and of their ungullible fellows.

Rhizodontrophy.—This formidable word has been introduced to denote a new operation for the treatment of alveolar abscess complicated by necrosis of the root of the tooth. The gum is incised, the alveolus drilled through with the dental engine, and the apex of the diseased root of the tooth is removed with a burr. It is difficult to understand the etymologic principles on which the word is constructed, but that is a small matter when a word must be found.

The Disposal of Typhoid and Cholera Excreta.—The Medical Officer of Health of Blackburn, England, Dr. Barwise, advises the use of a special pail with an hermetically closing lid, containing several pounds of calcium chlorid, in which the infected material is placed. The pail is each day removed, the contents destroyed by heat, and the disinfected pail returned. The plan has given satisfaction at the Bolton Fever Hospital.

Division of Spoils.—*The Medical Record* says that the physician and the hotel-keeper are sometimes guilty of

disreputable methods—the former in one instance, for example, charging the guests seven dollars a visit and giving the innkeeper two as his share of the plunder. There seems to be no end of this sort of thing. But in order to punish such graceless professional members as these it is necessary to "first catch your hare."

Dispensary Abuse.—The Presbyterian Eye, Ear, and Throat Charity Hospital of Baltimore has a non-professional gentleman employed to interview patients whom he suspects to be able to pay. If his suspicions are confirmed, he informs them that they must get advice outside of the dispensary. "Many hundreds were thus turned away during 1892." Is there another hospital that does this?

A Typewriter for the Blind has been invented which prints embossed characters and is adapted to any type. This is a praiseworthy means of giving these unfortunate defectives interest and employment. The *Lancet* suggests telegraphy and telephony as further possible outlets for the energies of the blind. May not the phonograph be turned to a similar use?

The New York Physicians' Mutual Aid Association has a membership of eleven hundred and forty-three, and the amount now paid on each death is one thousand dollars. The assessments in 1892 were fourteen, of one dollar each, a remarkably low rate of life-insurance. Such associations should be formed in all States.

Dearth of Cholera-News.—There is a remarkable absence of reports of the recrudescence and extension of cholera throughout the world that so far is in marked contrast to what has been feared and phophesied. Is it the calm before the storm?

SELECTIONS.

THE ESTEEM OF ONE'S FELLOWS.

WHO of us is not in need of friendly encouragement in the changing events of life? True happiness is not based on the appreciation of others, but on the consciousness of one's own honest labor. How otherwise should we hold our ground in the midst of the turmoil of the day? How should we preserve the hope of progress and of final victory against the attacks of opponents and the insults which are spared to no one who comes before the public? He who during a long and busy life is exposed to public opinion certainly learns to bear unjust criticism with equanimity, but this comes only through the confidence that our cause is the best, and that some day it must triumph. Such is our hope in our wrestlings for progress in science and art; such is our hope in our struggles for civil and religious liberty, and in this hope we gradually become hardened against malicious attacks. It is a kind of immunization which, I acknowledge, has also great drawbacks, for this hardening toward unjust attacks leads very easily to a similar indifference toward just attacks, and, owing to the tendency to contradiction rooted in the nature of human thought, it finally leads also to indifference to praise and recognition. One withdraws again and again into oneself, discontented with the world and with oneself also; but who can so completely retire within himself that the consciousness of the insufficiency of human thought, and that the criticisms of opponents are justified, cannot break through the crust of even the most hardened self-consciousness? Happy is he who has courage enough to keep up or regain his connections with other men, and to take part in the common work. Thrice happy he who does not lack in this work the flattering commendation of esteemed colleagues.—VIRCHOW: Croonian Lecture, in *British Medical Journal.*

PATHOLOGY AND BIOLOGY.

THE way in which pathology has tried to approach the desired goal, to fathom the living substance in its diseased conditions, has led us a great step forward. Pathologic anatomy, especially, has opened this road. The more numerous its observations, and the more it penetrated into the details of the lesions, the smaller became the field of so-called general diseases. The first steps of medieval anatomists had the effect of drawing the attention to local diseases. In the first and longest period, which one may define as that of regionism, the pathologic anatomists sought the cause of disease in one of the larger regions or cavities of the body—in the head, chest, or abdomen. In the second period, ushered in by the immortal work of Morgagni, shortly before the time of which I last spoke—the time of Brown and Hunter—they endeavored to find in a certain region the actual organ which might be considered as the seat of disease. On this foundation arose the Parisian school of organicism, which, until late in this century, held a dominant position in pathology. In this school, already, they recognized that not the organ, nor even a portion of it, could be the ultimate object of research. Xavier Bichat divided the organs into tissues, and showed that in the same organ sometimes one and sometimes another tissue might be the seat of disease.

From that time forward the eye of the pathologic anatomist was directed chiefly to the changes in the tissues, but it soon became apparent that even the tissues are not simple substances. Since the third decade of this century the microscope has disclosed the existence of cells, first in plants and very soon afterward in animals. Only living beings contain cells, and vegetable and animal cells show so much similarity of structure that one can demonstrate in them the actual product of organization. This conviction has become general, since through our embryologists, especially through Schwann, proof has been afforded that the construction of embryonic tissues was derived from cells also in the highest animals and in man himself.

In the fourth decade of this century the science of pathologic anatomy had already begun to be directed toward cells. These researches very soon struck on great difficulties. Many tissues, even in their developed state, appeared to contain neither cells nor their equivalents; nevertheless, I have been able to demonstrate their existence in those tissues in which their presence appeared to be most doubtful—namely, in bone and connective tissues. At the present time we are so far advanced as to be able to say that every living tissue contains cellular elements. We go a step further even,

for we require that that tissue alone should be called living in which the constant occurrence of cells can be shown.

A still greater difficulty then appeared, namely, to discover in what way new cells originated. The answer to this question had been very heavily prejudiced by the so-called cell-theory of Schwann. Inasmuch as this very trustworthy investigator asserted that new cells originated from unformed matter, from "cytoblastema," there was opened up a wide road to the old doctrine of the "generatio æquivoca," which afforded all partisans of plastic materials an easy way of reviving their dogma. The discovery of cells of connective and allied tissues gave me the first possibility of finding a cellular matrix for many new growths. One observation followed another, and I was soon in a position to give utterance to the dictum, "Omnis cellula e cellulâ."

And so at last the great gap was closed which Harvey's ovistic theory had left in the history of new growth, or, to speak more generally, in the history of animal organization. The begetting of a new cell from a previous cell supplements the reproduction of one individual from another—of the child from the mother. The law of the continuity of animal development is therefore identical with the law of heredity, and this I now was able to apply to the whole field of pathologic new-formation. I blocked forever the last loophole of the opponents, the doctrine of the specific cells of pathology, by showing that even diseased life produced no cells for which types and ancestors were not forthcoming in normal life.

These are the fundamental principles of cellular pathology. In proportion as they have become more certain, and lastly of more general value, they have also secured for themselves great importance in physiology. The cell is not only the seat and vehicle of disease, but also the seat and carrier of individual life; in it resides the "vita propria." It possesses the property of irritability, and the changes in its substance, provided these do not destroy life, produce local disease.

Disease presupposes life; should the cell die, its disease also comes to an end. Certainly, as a consequence, the neighboring and even far distant cells may become diseased, but, as regards the cell itself, the susceptibility to disease is extinguished with life.

Since the cellular constitution of plants and animals has been proved, and since cells have become recognized as the essentially living elements, the new science of biology has sprung up. It has not brought us the solution of the ultimate riddle of life, but it has provided concrete material, anatomic objects for investigation, the properties, the actions, and the passions of which we can analyze. It has put an end to the wild confusion of fantastic and arbitrary notions such as I have just mentioned; it has placed in a strong light the immeasurable importance of anatomy, even in the most delicate conditions of the body, and lastly, it has made us aware of the close similarity of life in the highest and lowest organisms, and has thus afforded us invaluable means for comparative investigation.

Pathology has also its place, and one certainly not without honor, in this science of biology; for to pathology we are indebted for the knowledge that the opposition between healthy and diseased life is not to be sought in a fundamental difference of the two lives, not in an alteration of the essence, but only in an alteration of the conditions.

Pathology has been released from the anomalous and isolated position which it had occupied for thousands of years. By applying its revelations not only to diseases of man, but also to those of animals, even the smallest and lowest, and to those of plants, it in the best manner helps to strengthen biologic knowledge, and to narrow still more that region of the unknown which still surrounds the intimate structure of living matter. It is no longer merely applied physiology; it has become physiology itself.

Nothing has more contributed thereto than the constant scientific union which has endured for more than three hundred years between English and German investigators, and to which we to-day add yet another link. May this union never be broken!—VIRCHOW, Croonian Lecture, in the *British Medical Journal*, March 18, 1893.

CONCERNING CHOLERA.

THE arrival of a steamship from Hamburg at the Spanish port of Malaga with a case of Asiatic cholera on board will not be overlooked by sanitary authorities on either side of the Atlantic. It indicates that at the very beginning of spring the condition of Hamburg is such that all possible precautions should be taken at American ports to prevent the introduction of cholera from that city. A brief review of the condition of Europe with respect to cholera during the past winter is suggested by this news.

It is well known that the water-supply of Hamburg has not been improved. Water is still taken from the Elbe at a point about two miles above the city, and is not even filtered. During the winter cases of cholera have been reported in Hamburg from time to time. Probably there were many more that were not reported. Sailors in the harbor have taken the disease by drinking water from the river, and in other ways it has been shown that the stream still carries the germs of this malady. We believe it is commonly expected in Europe that, with the return of warm weather, there will be another epidemic of cholera in Hamburg. The conditions are certainly favorable, so far as the water-supply is concerned. It is unfortunate that the Imperial Board of Health has not had power to compel a sanitary purification of this supply.

There has been a local epidemic in an asylum near Halle, in Germany, and the agent of infection in this instance also was the water-supply, which was taken from the River Saale. Careful investigation revealed the presence of the germs of cholera in the water of that stream, even after it had passed through filtering beds. It seems probable that several streams in Northwestern Germany may still be in a condition that tends to make them sources of infection.

There has been no recurrence of cholera in Paris, but in Marseilles there was a local epidemic, which was quickly suppressed. Within a short time two or three cases have been reported in Italy, but they appear to have been sporadic. A considerable number of cases were reported in the northern and central cities of Rus-

sia during the winter; but in these instances the disease was easily controlled or was stamped out by the severity of the season.

In Southern Russia, however, and especially in the region adjoining Galicia, there has been a marked and threatening revival of the plague which caused such great mortality there last summer. The condition of the inhabitants is very deplorable, and they are an easy prey to infectious diseases of all kinds. The failure of their crops and the loss of their cattle, following the terrible ravages of cholera, have left them in a state of almost helpless destitution. The return of spring finds them prostrated by influenza, cholera, and fevers.

The people of Western Europe and America should guard against infection from Hamburg and Southern Russia. A majority of the emigrants from Russia take ship from Hamburg, but some of them sail from Mediterranean ports. The number of immigrants arriving in this country from Russia, including Poland, in the months of January and February, was 1292. The monthly average in the year 1892 was about 6100. Since the beginning of March, however, there has been a revival of immigration.

While precautions should be taken to prevent the introduction of cholera at our ports—and especially at this port—the thorough cleaning of our cities and the protection and purification of their water-supplies are safeguards of the greatest importance. We may not be able to bar out the disease, although we should strive earnestly to do so, but cholera can do comparatively little harm in a community of intelligent people where sanitary laws are enforced and the water-supply is not exposed to pollution. Now is the time to clean the streets of New York and to insure the purity of the Croton water.—*N. Y. Times.*

REGULATION OF MEDICAL PRACTICE IN OHIO.

THE great State of Ohio has at last awakened to the necessity for some regulation of the practice of medicine; her legislators feel that ignorant men and women should not be allowed to practise upon unsuspecting victims; they have therefore passed a law requiring an examination before allowing doctors to practise—*upon horses.* Of course, horses are much more valuable than are men and women; therefore, they readily saw the necessity of protecting horses against quacks. This law was passed by the same branch of the Legislature which refused to give a decent hearing to a bill to regulate the practice of medicine among human beings. We are in hopes that, after they regulate the practice among dogs, cats, and bedbugs, the lower animals (men and women) may receive some protection against ignorance and rapacity. If we only have patience the wise (?) members of the Legislature will finally see that animals as low in the scale as men, women, and children have some rights.—*The Cincinnati Lancet-Clinic.*

Dr. William J. Gibson, a young physician of much promise, who had developed a large general practice in the southern part of Philadelphia, died at Asheville, N. C., on February 9, 1893. Dr. Gibson graduated from Princeton College in 1880; from the College of Physicians and Surgeons of New York in 1883.

CORRESPONDENCE.

PRACTICAL HELPS IN THE USE OF THE METRIC SYSTEM.

To the Editor of THE MEDICAL NEWS,

SIR: In working with the metric and apothecaries' systems of measures, I have noticed some figures that make the relation between the two very simple.

Starting with the relation that 15 grains equal 1 gram, we have:

15 grains = 1 gram.
15 grams = ½ ounce.

Then with fractions and unity we have:

1 grain = 0.0666 grams.
½ " = 0.0333 "
⅓ " = 0.0222 "
1/15 " = 0.0111 "
⅛ " = 0.0083 "

Here we have a set of reciprocal relations which, taken in pairs, are:

1 grain = 0.0666 gram. ⅛ grain = 0.0111 gram.
½ " = 0.0333 " ⅓ " = 0.0222 "
⅛ grain = 0.008 gram.

For memorizing: 1 = 6, ½ = 1; ⅓ = 3, ⅛ = 2; the decimal point being kept in mind, ⅛ = 0.008. Knowing these, 10 grains will, of course, equal 0.66 gram; 5 grains will equal 10 × ½ grain or 0.33 gram. 3 grains is slightly under 10 × ⅓ grain = 0.22 gram. 2 grains is slightly over 10 × ⅛ grain = 0.11 gram.

The same way, moving the decimal point in the other direction, 1/20, 1/30, 1/60, 1/30, can be estimated. Having these obtained so easily, the mind can very quickly substitute for numbers or fractions that come between.

Liquids by the apothecaries' system are dispensed by measure, so that when we wish to dispense by weight, as in the metric system, we must increase the figures in proportion as the substances are heavier, because they occupy less room than the same amount of water, on the volume of which substance the relations are based. The following figures are from Mann's *Prescription-Writing:* Glycerin and syrups are about one-fourth heavier, chloroform one-half heavier, ether one-fifth lighter. All the others are near enough the same:

50 grams = 10 teaspoonful doses.
200 " = 10 tablespoonful doses.

From these figures mj of chloroform would be (0.066 gram + ½) = 0.099 gram.

Putting the whole thing in a nutshell, we have:

15 grains = 1 gram.
15 grams = ½ ounce.
4 " = 1 dram.
1 grain = 0.066 gram.
⅙ " = 0.011 "
½ " = 0.033 "
⅓ " = 0.022 "
⅛ " = 0.008 "

Glycerin and syrups one-fourth heavier, chloroform one-half heavier, ether one-fifth lighter.

50 grams = 10 teaspoonful doses. 200 grams = 10 tablespoonful doses. Very respectfully,

CLARENCE O. AREY.

CHESTNUT HILL, PHILADELPHIA.

WOOD-SORREL FOR CARCINOMA.

To the Editor of The Medical News,

Sir: Having read the letter of Dr. Reeve in The Medical News of February 11, 1893, p. 167, on wood-sorrel, I write a few lines to say that I find a note on the margin of the notice of *oxalis acetosella*, in my volume of *Resources of the Southern Fields and Forests*, as follows: "Eltinge reports cases of epithelioma of the lips cured by application of the inspissated juice (*Phila. Medical Times*, xii, 159). *Rumex acetosa* used for similar purposes." 1889. I thought the reference might interest you.

Yours most truly,

F. Peyre Porcher.

Charleston, S. C.

WOOD-SORREL AS A CANCER-CURE.

To the Editor of The Medical News,

Sir: In The Medical News of January 28th there appears a letter from George Walker, M.D., of Yorkville, S. C., in which he speaks of an "old woman" remedy for carcinoma, in the form of extract of wood-sorrel. He explains its therapeutic action by the chemical changes that take place in its preparation, the evaporation of the juice of the plant by exposing it to the sun's rays for one week in a *pewter plate*, thus forming oxalates of lead and tin, by the union of the free oxalic acid and acid potassium oxalate contained in the juice with the lead and tin of the pewter. These salts, he infers, supply the caustic properties to the extract.

The Doctor's chemistry is doubtless correct, and, while I can offer no satisfactory explanation of what the peculiar caustic properties possessed by the extract are, I am obliged to differ with him as to the oxalates of lead and tin being the essential therapeutic agents of the extract to render it caustic, etc. My reasons are as follows: In my boyhood days I had considerable experience in the preparation of this extract, and know that it possesses the same caustic properties, whether prepared by evaporation in earthen or in pewter dishes.

Twenty-five years ago my father, then a country practitioner in this county, obtained the knowledge of the peculiar caustic properties possessed by the extract of wood-sorrel from an old gentleman living a few miles from my home, who prepared and applied it in the treatment of some form of neoplasm about one of his eyes—probably epithelioma of the lid. I remember very distinctly seeing the man in my father's office, and hearing my father relate how the extract of wood-sorrel had cured the old gentleman's cancer—but the eye was lost, whether from the effects of the caustic or from the carcinoma I cannot say, and in my youthful indifference I did not deem it of sufficient importance to inquire.

But the preparation of the extract was of far greater moment to me, as my father afterward employed it quite extensively in the treatment of epitheliomas, and supplied it to several other practitioners, as there grew to be quite a demand for the drug in our vicinity. As my father would readily pay one dollar per ounce for it, my brother and myself spent many not unpleasant days in the woods gathering the sorrel, beating it to a pulp, and expressing the juice, which we afterward exposed to the sun in earthen plates (never in pewter), and were thus able to place on the market a fine article of the solid extract that at once netted us one dollar per ounce and depleted the paternal treasury accordingly.

I think these early pharmaceutical efforts must have produced a more lasting effect on my brother's mind than upon mine, for when he graduated at the University of New York, a number of years later, he chose as the subject of his thesis "Epithelioma," in which the use of wood-sorrel extract as a curative agent in these cases was treated exhaustively.

S. Mitchell, M.D.

Hornellsville, N. Y.

NEWS ITEMS.

The Johns Hopkins Medical School will be opened for the instruction of properly qualified students, October 2, 1893. Men and women will be admitted on the same terms. The school will be a department of and under the direction of the Johns Hopkins University, and will derive great advantages from its close affiliation with the Johns Hopkins Hospital. In addition to the resources of these two foundations, the Johns Hopkins Medical School has an endowment of its own.

The school now established is planned for the professional education of those students who have been especially fitted to receive its instructions by a course of preliminary training in the liberal arts, and especially in those branches of science, like physics, chemistry, and biology, which underlie the medical sciences. An ability to read French and German and so much Latin as is requisite for his professional use must be shown by every candidate.

Course of Instruction: The course of instruction will continue through four years. Anatomy, including normal histology and embryology, physiology, and physiologic chemistry will be the principal studies of the first year. The study of anatomy will be continued in the second year, and in addition pharmacology, general pathology and pathologic anatomy, bacteriology, and the general principles of medicine and surgery will be taken up. During the last two years clinical instruction will be given in medicine, surgery, obstetrics, and gynecology, and the various special branches of practical medicine and surgery, such as ophthalmology, dermatology, laryngology, neurology, pediatrics. Instruction in hygiene, psychiatry, legal medicine, and medical history will be provided during the course.

A full statement of the courses of instruction and of hospital and laboratory facilities will be issued hereafter.

Practical work in the dissecting-room, the laboratory, and at the bedside, demonstrations, clinics, and recitations will form the most prominent features of the methods of instruction. Conferences or seminary methods will also be employed.

The charge for tuition will be two hundred dollars per annum. There will be no extra charges for instruction in any department, or for laboratory courses except for material consumed.

For the present, no student will be admitted to advanced standing.

Hearers, not candidates for a degree, will be received at the discretion of the Faculty.

As candidates for the degree of Doctor of Medicine the school will receive:

1. Those who have satisfactorily completed the chemical-biologic course which leads to the A.B. degree in this University.

2. Graduates of approved colleges or scientific schools who can furnish evidence: *a*, That they have a good reading knowledge of French and German; *b*, That they have such knowledge of physics, chemistry, and biology as is imparted by the regular minor course given in these subjects in this University.[1]

3. Those who give evidence by examination that they possess the general education implied by a degree in arts or in science from an approved college or scientific school, and the knowledge of French, German, physics, chemistry, and biology already indicated.

Ophthalmic Section, American Medical Association.—The time for the annual meeting of the American Medical Association (June 6th to 9th, at Milwaukee, Wis.) is so near at hand that all members who wish to contribute papers must send the titles of their papers to the secretary before April 25th, in order to have them appear in the general program, and in order to make arrangements for discussion. It is also urgently requested that brief abstracts be furnished not later than May 15th in the form in which authors wish them to appear in the preliminary report of the meeting. The announced communications, as well as the names of those who have promised to attend, assure the success of the next meeting. In view of the historic interest which the Columbian celebration lends to the meeting, it is highly desirable that American ophthalmology should be well represented by the names and presence of those who have contributed to its present advanced position. S. D. Risley, M.D., Chairman, 1722 Walnut Street, Philadelphia; H. Gradle, M.D., Secretary, 65 Randolph Street, Chicago.

BOOKS AND PAMPHLETS RECEIVED.

On Anesthesia from Ether. By James W. Guest, M.D. Reprint, 1892.

Introductory Address at the Chicago College of Physicians and Surgeons, Session of 1892 and 1893. By G. Frank Lydston, M.D. Reprint, 1892.

Remarks on So-called Urethral Fever. By G. Frank Lydston, M.D. Reprint, 1893.

The Mydriatics in Ophthalmology. By S. D. Risley, M.D. Reprint, 1893.

Abscess Around the Rectum. By Charles B. Kelsey, M.D. Reprint, 1893.

Treatment of Atrophic Retinitis. By M. D. Lederman, M.D. Reprint, 1893.

Intra-cranial Neurectomy of the Second and Third Divisions of the Fifth Nerve. By John B. Roberts, M.D. Reprint, 1892.

Tumor of the Liver in which Removal was Attempted. By John B. Roberts, M.D. Reprint, 1892.

Some Physiological Experiments with Magnets at the Edison Laboratory. By Frederick Peterson, M.D., and A. E. Kennelly. Reprint, 1892.

The Cosmetic Surgery of the Nose. By John B. Roberts, M.D. Reprint, 1892.

Fel Bovinum as a Therapeutic Agent. By D. H. Bergey, M.D. Reprint, 1893.

Report of the New York State Board of Charities on the Selection of a Site for, and the Organization of, an Epileptic Colony. Transmitted to the Legislature, January 11, 1893.

A Case of Acute Purulent Inflammation of the Middle Ear, with Double Optic Neuritis, but without Tenderness or Swelling of, or Spontaneous Pain in, the Mastoid Process; in which the Opening of the Mastoid Cells was followed by a Rapid Subsidence of the Optic Neuritis and Cure of the Ear-Disease. By Charles J. Kipp, M.D. Reprint, 1892.

A Case of Bilateral Recurrent Inflammation of Tenon's Capsule in Connection with Profound Mercurial Poisoning. By Charles J. Kipp, M.D. Reprint, 1893.

Santonin as an Emmenagogue. By D. H. Bergey, M.D. Reprint, 1893.

The Nervous Affections that May Arise from Malaria. By Walter Browning, M.D. Reprint, 1893.

A Synopsis of the Various Points of Interest in Post-mortem Examinations. By Charles H. Merz. M.D. Reprint, 1893.

Syringomyelia. By J. T. Eskridge, M.D. Reprint,

Arterial Saline Infusion. By Robert H. M. Dawbarn, M.D. Reprint, 1892.

Official Reports of the Trustees and Officers of the State Hospital for the Insane, at Danville, Pa., from October 1, 1890, to September 30, 1892. Danville: Sun Publishing Co., 1892.

A New Method for Treating Cases of Suspended Animation with an Insufflator. By Edwin De Baun, M.D. Reprint, 1893.

The Use of the Currette in Uterine Surgery. By A. Vander Veer, M.D. Pamphlet. Albany, N. Y.: C. F. Williams.

Senn's Great Surgical Clinics at the Rush Medical College, Chicago. By G. Wiley Broome, M.D. Reprint, 1893.

Discussion of Dr. Vaughan's Paper. By Bayard Holmes, B.S., M.D. Reprint, 1892.

The Forthcoming Report of the Bureau of Education on Professional Education in the United States. By Bayard Holmes, B.S., M.D. Reprint, 1893.

Fifteenth Annual Report of the Presbyterian Eye, Ear, and Throat Charity Hospital, 1892. Baltimore: John S. Bridges & Co., 1893.

The Methods of Examining the Blood. By Alfred Stengel, M.D. Reprint, 1893.

The Technique and Diagnostic Value of Ehrlich's Method of Staining the White Blood-corpuscles. By Thomas S. Southworth, M.D. Reprint, 1893.

The Treatment of Hernia. By Alexander Dallas, M.D. Pamphlet. New York: Edgar P. and St. Co., 1893.

The Bicycle in its Relation to the Physician. By Seneca Egbert, A.M., M.D. Reprint, 1892.

Uric Acid Gravel and Gout. The Croonian Lectures for 1892, with Additions by Sir Wm. Roberts, M.D., F.R.S. London: Smith, Elder & Co., 1892.

Eighth Annual Report of the Adirondack Cottage Sanitarium, Saranac Lake, N. Y., November, 1892.

The Twelve Tissue Remedies of Schussler. By Wm. Boericke, M.D., and Willis A. Dewey, M.D. Third edition. Philadelphia: Boericke & Tafel, 1893.

Some Ocular Perceptions, and how they are Influenced by Lenses. By R. J. Phillips, M.D. Reprint, 1893.

The Ocular Complications of Erysipelas. By R. J. Phillips, M.D. Reprint.

Handbook of Insanity for Practitioners and Students. By Theodor Kirchhoff, M.D. New York: Wm. Wood & Co., 1893.

Optometry. By Flavel D. Tiffany, M.D. Reprint, 1893.

The Johns Hopkins Hospital Reports. II. Report in Pathology. Contents: I. Papillomatous Tumors of the Ovary. II. Tuberculosis of the Female Generative Organs. By J. Whitridge Williams, M.D. Baltimore: The Johns Hopkins Press, 1892.

Transactions of the American Orthopedic Association. Sixth Session. Vol. V. Philadelphia: Published by the Association, 1893.

[1] By a minor course is understood one that requires a year for its completion. In physics, five class-room exercises and three hours a week in the laboratory; in chemistry and biology five class-room exercises and five hours a week in the laboratory in each subject are required. Applicants for admission will receive blanks to be filled out relating to their previous courses of study.